Vol. V.

TRANSCRIPT OF RECORD

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1913.

No. 375

DES MOINES GAS COMPANY, APPELLANT

vs.

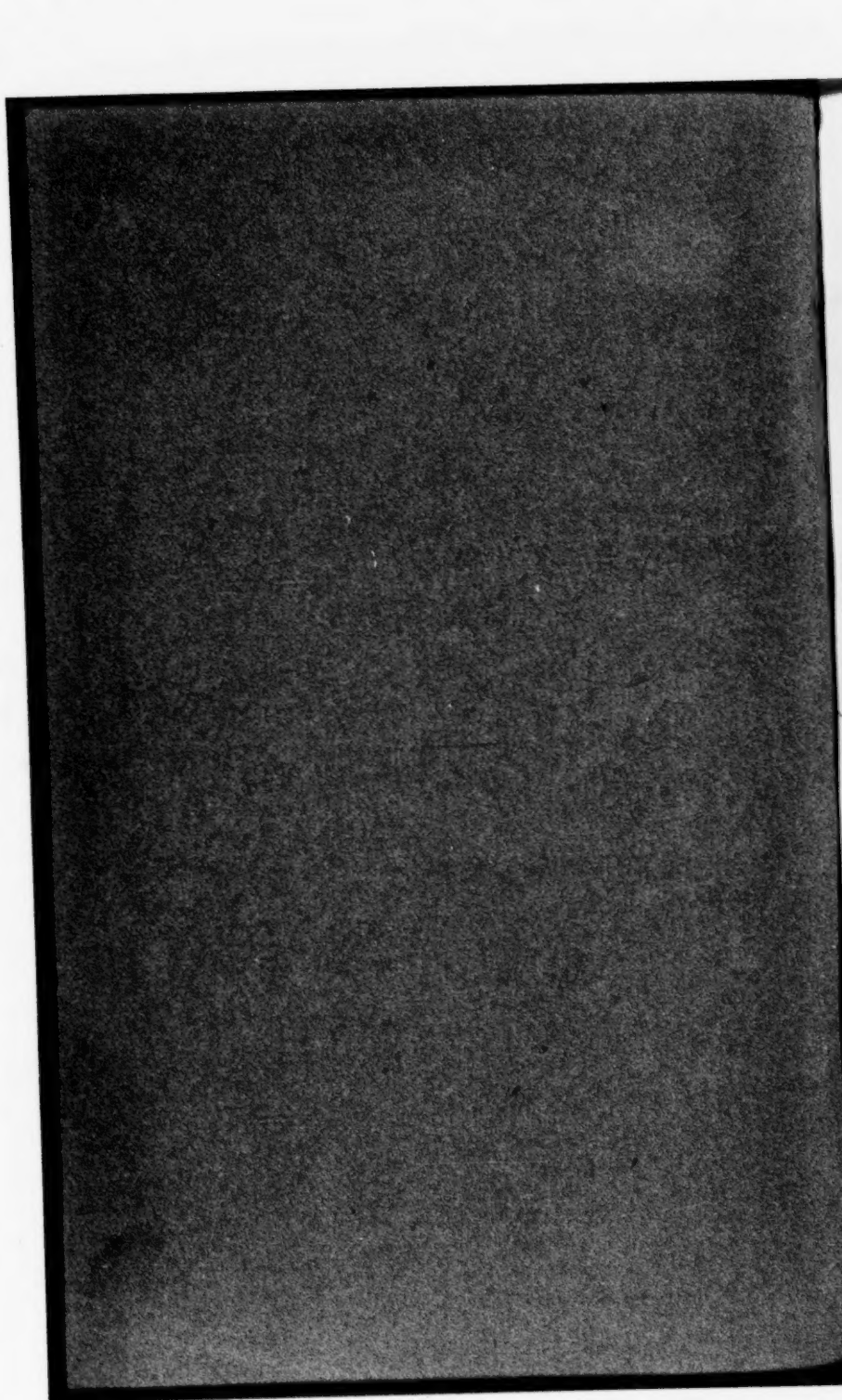
CITY OF DES MOINES.

MINNESOTA LAW LIBRARY

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF IOWA.

FILED DECEMBER 14, 1913.

(23,459)



(23,459)

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, 1913.

No. 397.

DES MOINES GAS COMPANY, APPELLANT,

vs.

CITY OF DES MOINES ET AL.

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF IOWA.

VOLUME V.

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3—Proceedings of the city council of city of Des Moines, October 21, 1910, page 958 (read in record page 67 of testimony).		
4—Proceedings of city council of city of Des Moines, February 1, 1911, pages 1186 and 1192 (read in record page 68 of testimony).		

JUDD & DETWEILER (INC.), PRINTERS, WASHINGTON, D. C., JULY 18, 1913.

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VOLUME V.

DES MOINES GAS COMPANY
vs.
CITY OF DES MOINES et al.

1—460 * * * * * * *

461 COMPLAINANT'S EXHIBIT # 20.

7/21/11. H. C. W.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

Des Moines Gas Company, Des Moines, Iowa.

462 Henry I. Lea, Consulting Gas Engineer,
People's Gas Building, Chicago,
Member American Gas Institute, American Society of Mechanical Engineers.

JUNE 24TH, 1911.

Jansen Haines, Gen. Mgr., Des Moines Gas Company, Des Moines, Iowa.

DEAR SIR: In accord with your instructions of January 13th last, I have made a detailed examination of that portion of the property of the Des Moines Gas Company which is used and useful in the manufacture, distribution and sale of gas within the City of Des Moines, and of the operating expenses and income of the Des Moines Gas Company, in so far as they are affected by the sales of gas within the City of Des Moines.

This examination was made for the purpose of determining the value of the aforesaid property and business of the Des Moines Gas Company, and I am now able to report that, in my judgment, the present costs of reproduction and the present value of such property and business, are fairly shown in the table following:

	Reproduction costs.	Present values.
Organization & Legal Expense	$68,023.00	$68,023.00
Working Capital	150,896.00	150,896.00
Real Estate	259,655.00	259,655.00
Buildings	106,934.00	82,445.00
Works Equipment	510,179.00	384,723.00
Distribution System	1,963,027.00	1,732,963.00
Going Value	583,000.00	583,000.00
Totals	$3,641,714.00	$3,261,705.00

In the form of Exhibits attached hereto, you will find a large amount of the data and some of the calculations through which I have arrived at the above conclusions.

Respectfully submitted,

HENRY I. LEA.

H. I. L.—M. S.

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Organization and Legal Expense	Exhibit A.
Working Capital	" B.
Engineering, etc.	" C.
Summary of Physical Equipment, Reproduction Costs, Present Values, etc	" D.
Summary of Physical Equipment, Net Construction Costs	" E.
Net Construction Costs:	
Real Estate	" F.
Buildings	" G.
Works Equipment	" H.
Distribution Systems	" I.
Going Value Calculation	" J.

464 EXHIBIT A.

465 *Organization & Legal Expense.*

Preliminary investigation	$3,000.00
Preparing articles of incorporation, making and certifying abstracts, drawing and examining contracts, and general retaining fee	10,000.00
State incorporation fee	4,000.00
Salary of manager (3 years)	22,500.00
Incidental and travelling expenses (3 years)	4,500.00
Clerical force (3 years)	13,500.00
Rent and stationery (3 years)	4,500.00
	$62,000.00
Taxes during construction	1,429.00
Loss of interest during construction	4,594.00
Total Organization & Legal Exp	$68,023.00

466

EXHIBIT B.

467

Working Capital.

Materials and supplies:		
Storeroom	$40,251.89	
Tar	1,235.34	
Gas Stock	811.44	
Boiler Fuel Stock	737.95	
Generator Fuel Stock	10,449.98	
Gas Coal Stock	1,222.16	
Oil (W. G.) Stock	9,301.80	
Purification Supplies Stock	4,113.30	
Stable	5,805.40	
Gas Arc Lamps	3,481.20	
		$77,410.46
Accounts receivable:		
Gas Sales	$34,092.34	
Sundry Sales	17,851.80	
City of Des Moines	126.40	
Sundry Debtors	1,556.92	
		53,627.46
Cash:		
Cash	$20,137.61	
Petty Cash	1,350.00	
Treasurer	27,946.54	
		49,434.15
Advance accounts:		
Advance Insurance		905.20
Total		$181,377.29
Less accounts payable		39,607.29
Total		$141,770.00
Say		$142,000.00
Taxes during construction		2,412.00
Loss of interest during construction		6,484.00
Total working capital		$150,896.00

468

EXHIBIT C.

469

Engineering, etc.

Engineering and Supervision	5%
Casualty Liability	2%
Omissions and Contingencies	8%
	15%

(With exception of Real Estate, the above percentage (15) has been added to net construction costs of all physical equipment.)

EXHIBIT D.

Summary of Physical Equipment.

	Total reproduction cost.	Age in years.	Assumed life. (Years.)	Per cent condition.	Present value.	Depreciation annuity on sinking fund basis.
Real estate:						
Parcel A— 78,400 sq. ft.	.....	....	..	....	.....	.....
" B— 66,784 " "	.....	....	..	....	.....	.....
" C— 17,424 " "	.....	....	..	....	.....	.....
" D— 19,600 " "	.....	....	..	....	.....	.....
" E— 14,156 " "	.....	....	..	....	.....	.....
196,358 " "	.....	....	..	....	.....	.....
Total Real Estate	$259,655.00	46	..	100	$259,655.00	0
Buildings:						
# 1 A & B	$11,860.00	19	50	77.	$9,132.00	$105.00
# 1 C	155.00	8	30	82.	127.00	3.00
# 3	9,718.00	35	50	66.	6,414.00	86.00
# 4	6,300.00	35	50	66.	4,158.00	56.00
# 5	3,754.00	35	50	66.	2,478.00	33.00
# 6 A & B	8,550.00	9	50	78.	6,669.00	76.00
# 6 C	1,689.00	2	40	98.	1,655.00	22.00
# 7	19,131.00	2	50	99.	18,940.00	179.00
# 8 A	8,700.00	15	20	34.	2,958.00	308.00
# 8 B	549.00	10	20	60.	329.00	19.00
#10	10,255.00	35	50	66.	6,768.00	91.00

#11	263.00	2	50	98.	258.00	2.00
#12	1,098.00	1	50	99.	1,087.00	10.00
#13	285.00	4	50	96.	274.00	3.00
#14	1,966.00	2	50	98.	1,927.00	17.00
#15	2,827.00	20	20	25.	707.00	100.00
#16	1,226.00	5	30	90.	1,104.00	26.00
#17	164.00	6	20	79.	130.00	6.00
#35	42.00	6	20	79.	33.00	2.00
#53	729.00	24	20	25.	182.00	26.00
#54	92.00	4	20	87.	80.00	3.00
#55	117.00	5	20	81.	95.00	4.00
West Side Office	17,464.00	1	20	97.	16,940.00	618.00
Total Buildings	$106,934.00	10.14	41	77.1	$82,445.00	$1,786.00
Works equipment:						
In Building # 1 A & B:						
1 Steam hydraulic elevator	$352.00	18	30	52.	$183.00	$7.00

	Total reproduction cost.	Age in years.	Assumed life. (Years.)	Per cent condition.	Present value.	Depreciation annuity on sinking fund basis.
4 Purifying Boxes	$23,784.00	6	30	87.	$20,692.00	$500.00
1 Oxide Conveyor	1,275.00	6	16	70.	892.00	66.00
Pipe	1,939.00	6	50	95.	1,842.00	17.00
	27,350.00					
In Building # 3:						
Foundations	1,984.00	10	25	69.	1,369.00	51.00
Photometer, etc.	1,650.00	11	15	33.	545.00	86.00
Pentane Lamps, etc.	895.00	6	10	42.	376.00	75.00
8′ Meter	3,161.00	9	30	80.	2,529.00	66.00
7′6″ "	2,918.00	6	30	87.	2,539.00	61.00
16″ Governor	1,032.00	15	50	83.	857.00	9.00
24″ "	2,002.00	8	50	92.	1,842.00	17.00
Washstand, etc.	544.00	6	15	68.	370.00	5.00
# 8 Exhauster	2,524.00	2	25	95.	2,398.00	65.00
# 7 "	2,047.00	16	25	49.	1,003.00	53.00
# 7 "	2,047.00	13	25	58.	1,187.00	53.00
# 5 Exhausters	2,452.00	5	25	87.	2,133.00	63.00
Tar Extractor	2,082.00	6	30	87.	1,811.00	44.00
Work Bench, etc.	467.00	6	15	68.	318.00	24.00
Pumps	969.00	14	20	40.	388.00	34.00
Pipe	3,783.00	10	50	90.	3,405.00	31.00
	30,557.00					

In Building # 4:						
Foundations	584.00	12	15	26.	152.00	30.00
Engines, etc.	1,365.00	12	15	26.	355.00	71.00
Water Gas sets	14,308.00	12	30	70.	10,016.00	301.00
Elevator, etc.	620.00	6	30	87.	539.00	13.00
Benches	13,106.00	12	20	0.	000.00	0.00
	29,983.00					
In Building # 5:						
Foundations	379.00	12	30	70.	265.00	8.00
Switch, etc.	1,134.00	6	25	84.	953.00	29.00
	1,513.00					
In Building # 6:						
Foundations	948.00	12	20	51.	483.00	34.00
Condensers	6,157.00	6	30	87.	5,357.00	129.00
Engines, etc.	3,567.00	11	15	33.	1,210.00	190.00
Pipe	1,295.00	8	50	92.	1,191.00	11.00
Boilers, etc.	6,801.00	11	15	33.	2,244.00	352.00
	18,868.00					

	Total reproduction cost.	Age in years.	Assumed life. (Years.	Per cent condition.	Present value.	Depreciation annuity on sinking fund basis.
In Building # 6 C:						
Foundations	$275.00	6	15	68.	$187.00	$14.00
Boiler, etc.	2,121.00	6	15	68.	1,442.00	110.00
	2,396.00					
In Building # 7:						
Foundations	4,789.00	9	30	80.	3,831.00	101.00
Water Gas sets	41,744.00	2	30	95.	40,074.00	877.00
Lockers, etc.	4,792.00	4	15	79.	3,786.00	248.00
	51,325.00					
In Building # 8 A:						
Scales	183.00	4	15	79.	145.00	9.00
In Building # 8 B:						
Elevator	1,942.00	15	30	61.	1,185.00	41.00
In Building # 10:	17.00	10	15	39.	7.00	1.00
Foundations	242.00	10	15	39.	94.00	13.00
Blowers, etc.	997.00	6	15	68.	678.00	52.00
Drill Press, etc.						
	1,256.00					

In Building # 12:						
Pumps	1,202.00	2	20	93.	1,118.00	32.00
"	256.00	10	20	60.	154.00	9.00
Pump	152.00	12	20	51.	78.00	5.00
"	85.00	6	20	78.	66.00	3.00
	1,695.00					
In Building # 13:						
Foundations	12.00	8	20	70.	8.00	1.00
Pump	595.00	8	20	70.	417.00	21.00
	607.00					
In Building # 14:						
Foundations	225.00	2	30	96.	216.00	5.00
Meter	10,194.00	2	30	96.	9,786.00	214.00
Pipe	1,056.00	2	30	96.	1,014.00	22.00
	11,475.00					

In Building # 16:	Total reproduction cost.	Age in years.	Assumed life (years).	Per cent condition.	Present value.	Depreciation annuity on sinking fund basis.
Foundations	$151.00	4	15	79.	$119.00	$8.00
Slab, etc.	83.00	4	15	79.	66.00	4.00
Boiler, etc.	1,280.00	4	15	79.	1,011.00	66.00
Gauges	1,047.00	4	10	61.	639.00	87.00
Fire protection	518.00	4	10	61.	316.00	43.00
Works Tools	728.00	2	10	80.	582.00	60.00
Outside Apparatus	1,990.00	20	20	25.	498.00	70.00
Wells, etc.	4,230.00	10	30	76.	3,215.00	89.00
Exhaust Steam Piping	2,744.00	5	20	82.	2,250.00	97.00
Steam Piping	4,932.00	5	20	82.	4,044.00	174.00
Circulation Piping	1,562.00	5	20	82.	1,281.00	55.00
Oil Piping, etc.	5,096.00	5	20	82.	4,179.00	180.00
Water Piping, etc	4,238.00	5	20	82.	3,475.00	149.00
Gas Piping	650.00	5	20	82.	533.00	23.00
Electric Wiring	229.00	5	15	72.	165.00	12.00
Sewer Piping	3,418.00	8	30	82.	2,803.00	72.00
Drain Piping	694.00	8	20	70.	486.00	25.00
Tar "	948.00	7	20	74.	702.00	34.00
Gas mains, etc.	25,705.00	8	50	92.	23,649.00	239.00
Paving	3,138.00	8	15	54	1,695.00	162.00
Fencing, etc.	3,481.00	6	20	78.	2,715.00	123.00
Oil Unloading Device	162.00	2	20	93.	151.00	6.00

Lumber	81.00	1	20	97.	73.00	3.00
Fixtures (Building # 50)	631.00	4	20	86.	543.00	22.00
Relief Holder # 18	36,248.00	49	40	25.	9,062.00	481.00
Storage " # 19	55,454.00	20	40	63.	34,936.00	735.00
" " # 20	137,988.00	8	40	89.	122,809.00	1,830.00
Oil Tank # 21	7,213.00	9	30	80.	5,770.00	152.00
" " # 22	3,461.00	14	30	65.	2,250.00	73.00
" " # 23	1,729.00	20	30	45.	778.00	36.00
Oil Tanks # 24 & # 25	20,500.00	2	30	96.	19,680.00	430.00
Oil Tank # 36	121.00	18	30	53.	64.00	3.00
" " # 58	495.00	7	30	85.	421.00	10.00
Pipe coating tank	72.00	11	10	25.	18.00	6.00
Rubbish Kiln	12.00	3	10	73.	9.00	1.00
Total Works Equipment	$510,179.00	9.24	33.32	75.41	$384,723.00	$9,933.00

Summary of Physical Equipment.

Distribution system.	Total reproduction cost.	Age in years.	Assumed life (years.)	Per cent condition.	Present value.	Depreciation annuity on sinking fund basis.
Street mains:						
2½" & Under	$14,838.00	8.97	25	76.	$11,277.00	$381.00
3" W. I.	39,025.00	8.97	35	85.	33,171.00	645.00
4" C. I.	572,370.00	8.97	50	91.	520,857.00	5,071.00
6" "	222,901.00	8.97	75	96.	213,985.00	1,034.00
8" "	128,270.00	8.97	75	96.	123,139.00	595.00
10" "	72,691.00	8.97	75	96.	69,783.00	337.00
12 "	78,159.00	8.97	75	96.	75,033.00	363.00
14" "	1,605.00	8.97	75	96.	1,541.00	7.00
16" "	124,887.00	8.97	75	96.	119,892.00	579.00
20" "	29,593.00	8.97	75	96.	28,409.00	137.00
24" "	20,659.00	8.97	75	96.	19,833.00	96.00
Total Mains	$1,304,998.00	8.97	62	93.25	$1,216,920.00	$9,245.00
House Services	$364,290.00	8.94	25	76.	$276,860.00	$9,351.00
Lamp "	31,592.00	8.94	25	76.	24,010.00	811.00
Total Services	$395,882.00	8.94	25	76.	$300,870.00	$10,162.00
Line Pot Drips	$3,040.00	8.97	60	94.	$2,857.00	$22.00
Valves	4,457.00	8.97	60	94.	4,190.00	33.00
Steam R. R. Crossings	4,839.00	8.97	60	94.	4,548.00	36.00

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Street " "	7,074.00	8.97	60	94.	6,650.00	52.00
Tools	6,333.00	8.97	60	94.	5,953.00	47.00
Total Miscellaneous	$25,743.00	8.97	60	94.	$24,198.00	$190.00
Meters in Use	$227,145.00	7.7	25	80.	$181,716.00	$5,831.00
" " Stock	9,259.00	0	25	100.	9,259.00	238.00
Total Meters	$236,404.00	7.4	25	80.78	$190,975.00	$6,069.00
Total Distribution System	$1,963,027.00	8.77	50	88.23	$1,732,963.00	$25,666.00
Total Physical Equipment	$2,839,795.00	*8.9	*46	*85.3	$2,459,786.00	$37,385.00

* All Physical Equipment except Real Estate.

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476 *Average Age of Mains.*

(Installation Basis.)

Year.	Total miles end of year.	Number miles installed during year.		Years in service.		Total year miles.
1910.....	183.89	6.73	x	0	=	0
1909.....	167.16	9.28	x	1	=	9.28
1908.....	157.88	6.70	x	2	=	13.40
1907.....	151.18	8.17	x	3	=	24.51
1906.....	143.01	21.71	x	4	=	86.84
1905.....	121.30	16.91	x	5	=	84.55
1904.....	104.39	5.48	x	6	=	32.88
1903.....	98.91	10.16	x	7	=	71.12
1902.....	88.75	7.24	x	8	=	57.92
1901.....	81.51	9.16	x	9	=	82.44
1900.....	72.35	2.93	x	10	=	29.30
1899.....	69.42	4.91	x	11	=	54.01
1898.....	64.51	6.84	x	12	=	82.08
1897.....	57.67	8.84	x	13	=	114.92
1896.....	48.83	10.47	x	14	=	146.58
1895.....	38.36	.92	x	15	=	13.80
1894.....	37.44	.13	x	16	=	2.08
1893.....	37.31	1.04	x	17	=	17.68
1892.....	36.27	.40	x	18 Av. 6.29		7.20
1891.....	35.87	35.87	x	27	=	988.49
1890-1864, 26 years	0	183.89		=		1,899.08
Average age						10.3 yrs.

* 18 : 26 : : 6.29 : x
x = 9.08

Average age of mains on investment basis = 8.97 years.

477 *Services—Average Age.*

(On Investment Basis.)

Year.	Investment.		Years service.		Dollar-years.
1910	$18,579		0		0
1909 (10 mos.)	14,002		5/6		11,668
1909 (12 mos.)	12,636		1 5/6		23,166
1908	12,538		2 5/6		35,524
1907	14,738		3 5/6		56,496
1906 (2 mos.)	649		4		2,596
1905	19,306		5		96,530
1904	14,913		6		89,478
1903	23,045		7		161,315
1902	17,843		8		142,744
1901	23,339		9		210,051
1900	16,944		10		169,440
1899	10,897		11		119,867
1898	7,716		12		92,592
1897	6,901		13		89,713
1896	6,879		14		96,306
1895	2,364		15		35,460
1894	1,617		16		25,872
1893	1,548		17		26,316
1892	2,272		18		40,896
1891	2,134		19		40,546
1890	1,783		20		35,660
1889 (6 mos.)	852		20.5		17,466
1889 (12 mos.)	2,601		21.5		35,921
1888	1,381		22.5		31,072
1887	2,358		23.5		55,413
1886 (6 mos.)	599		24		14,376
1885	2,776		25		69,400
1884	1,439		26		37,414
1883	1,604		27		43,308
1882	3,183		28		89,124
1881	1,174		29		34,046
1880	617		30		18,510
1879	428		31	Av. 8.26	13,268
1878	725	252380	32	2,084,754	23,200
Jan. 26, 1878	6,411		35.6		228,232
1878-1864, 14 years	258,791				2,312,986

$$\text{Aver. Age} = \frac{2,312,986}{258,791} = 8.94 \text{ years.}$$

x (32 : 14 : : 8.26 : x)

x = 3.6 **Against 8.27**

478 *Average Age of Meters.*

(Installation Basis.)

Year.	Total number of meters end of year.	Number of meters installed during year.		Years in service.		Total meters years.
1910	19,742	1,303	x	0	=	0
1909	18,439	1,339	x	1	=	1,339
1908	17,100	1,027	x	2	=	2,054
1907	16,073	1,433	x	3	=	4,299
1906	14,640	1,700	x	4	=	6,800
1905	12,940	1,504	x	5	=	7,520
1904	11,436	1,041	x	6	=	6,246
1903	10,395	1,497	x	7	=	10,479
1902	8,898	1,216	x	8	=	9,728
1901	7,682	1,257	x	9	=	11,313
1900	6,425	1,117	x	10	=	11,170
1899	5,308	1,181	x	11	=	12,991
1898	4,127	648	x	12	=	7,776
1897	3,479	611	x	13	=	7,943
1896	2,868	380	x	14	=	5,320
1895	2,488	263	x	15	=	3,945
1894	2,225	178	x	16	=	2,848
1893	2,047	173	x	17	=	2,941
1892	1,874	154	x	18	=	2,772
1891	1,720	182	x	19	=	3,458
1890	1,538	200	x	20	=	4,000
1889	1,338	17	x	21	=	357
1888	1,321	17	x	22	=	374
1887	1,304	43	x	23 (Av. 6.85)		989
1886	1,261	1,261	x	29.1	=	36,695
1886-1864, 22 years	0	19,742				163,357

$$\frac{163,357}{19,742} = 8.27 \text{ years (average age of meters).}$$

Average age of meters on investment basis 7.70 years.

479 EXHIBIT E.

480 *Summary of Physical Equipment.*

	Net construction costs.
Real Estate	$215,993.00
Buildings	85,723.00
Works Equipment	420,428.00
Distribution System	1,549,871.00
Total	$2,272,015.00

481 **EXHIBIT F.**

482 ***Real Estate.***

All that certain tract of land situated in the City of Des Moines, County of Polk, State of Iowa.

Consisting of five (5) parcels described as follows:

Parcel A is that tract of land on which the principal buildings of the Gas Works are located.

Beginning at a point at the South East corner of East First and East Vine Streets, thence in an Easterly direction Two Hundred and Eighty (280) feet to the Southwest corner of East Vine and East Second Streets, thence in a Southerly direction Two Hundred and Eighty (280) feet to the Northwest corner of East Second and East Market Streets, thence in a Westerly direction Two Hundred and Eighty (280) feet to the Northeast corner of East Market and East First Streets, thence in a Northerly direction Two Hundred and Eighty (280) feet to the point of beginning.

Containing 78,400 Sq. Ft.

Parcel B is that tract of land on which the Storage Holders, Stable, etc. are located.

Beginning at a point at the Southeast corner of East First and East Market Streets, thence in an Easterly direction Two Hundred and Eighty (280) feet to the Southwest corner of East Market and East Second Streets, thence in a Southerly direction Two Hundred and Eighty (280) feet to the Northwest corner of East Second and East Elm Streets, thence in a westerly direction One Hundred and Forty eight (148) feet to a point in the North side of Elm Street, thence in a Northerly direction Eighty-eight (88) feet to a point, thence in a Westerly direction One Hundred and Thirty-two (132) feet to a point in the East side of East First Street, thence in a Northerly direction One Hundred and Ninety-two (192) feet to the point of beginning.

Containing 66,784 Sq. Ft.

Parcel C. is that tract of land on which the Oil Storage Tanks are located.

Beginning at a point at the Southeast corner of East Elm and East Second Streets, thence in a- Easterly direction One Hundred and Thirty-two (132) feet to a point in the South side of East Elm Street, thence in a Southerly direction One Hundred and Thirty-two (132) feet to a point in the intersection of two alleys, thence in a westerly direction One Hundred and Thirty-two (132) feet to a point in the East side of East Second Street, thence in a
483 Northerly direction One Hundred and Thirty-two (132) feet to the point of beginning.

Containing 17,424 Sq. Ft.

Parcel D is that tract of land on which the Coke Storage Shed, Rack, etc. are located.

Beginning at a point at the Southeast corner of East Second and East Vine Streets, thence in an Easterly direction One Hundred and

Forty (140) feet to the centre of a vacated alley, thence in a Southerly direction One Hundred and Forty (140) feet to a point in the middle of the intersection of two alleys, thence in a Westerly direction One Hundred and Forty (140) feet to a point in the East side of East Second Street, thence in a Northerly direction One Hundred and Forty (140) feet to the point of beginning.

Containing 19,600 Sq. Ft.

Parcel E is that tract of land West of East First Street.

Beginning at a point at the Southwest corner of East Vine and East First Streets, thence in a Southerly direction Two Hundred (200) feet to a point in the West side of East First Street, thence in a Westerly direction Seventy feet Nine Inches (70′9″) more or less to a point in the East bank of the Des Moines River, thence in a general Northerly direction Two Hundred (200) feet to a point in the South side of East Vine Street, thence in an Easterly direction Seventy feet Nine inches (70′9″) more or less to the point of beginning.

Containing 14,150 Sq. Ft.

484 *Summary.*

Parcel A	78,400	sq. ft.	
" B	66,784	" "	
" C	17,424	" "	
" D	19,600	" "	
" E	14,150	" "	
	196,358	sq. ft. @ $1.00	$196,358.00
Add 10% for difficulty of obtaining contiguous lots at this time			19,635.00
Add for sinking test holes, grading and filling			5,000.00
			$220,993.00
Taxes during construction			10,470.00
Loss of interest during construction			28,192.00
			$259,655.00

485 EXHIBIT G.

486 *Purifying House (Building # 1 A & B).*

This building was erected in the year of 1892. It is divided into two divisions A & B.

Division A of brick, wood and steel construction, two stories high.

Division B of brick and wood construction, one story high.

Division A comprises the main structure and contains the purifying boxes, centre seal, etc., for the purification of gas.

Division B contains the elevator which was formerly used for raising oxide to the filling floor.

In the year of 1905 an addition was made to the building in the form of an oxide conveyor, which is used to elevate oxide from the yard to the filling floor.

Foundations of Division A are of concrete and brick in cement mortar.

Foundations of Division B are of brick in cement mortar.

Walls of Division A are of brick in cement mortar, reinforced by pilasters, cornice and watertable.

Walls of Division B are of brick in cement mortar.

Roof of Division A, slate on rough boards, resting on wood purlins, the whole supported by wood trusses.

Monitor of wood construction, with single swinging sash windows.

Roof of Division B, slate on rough boards, resting on wood rafters.

Ground floor of Division A of concrete on earth.

Second or filling floor of matched boards supported by wood members.

Ground floor of Division B of brick laid flat, cement grouted.

Doors in Division A of batten construction.

Doors in Division B of panel construction.

Windows in Division A are single and double sash, plain and box type.

Windows in Division B, double sash, box frame.

Sills and lintels of dressed stone and steel members.

Outside stairs and landing of wood construction.

Inside stairs also of wood construction.

All wood, structural steel and iron work painted.

487 *Purifying House (Building # 1 A & B).*

	Net construction cost.
Clearing site	$20.00
Excavation:	
189 cu. yds. at $1.10	208.00
Foundations:	
Concrete:	
39 cu. yds. at $8.00	312.00
Forms at $2.00 per cu. yd. concrete	78.00
Brick:	
3,056 Brick at $16.50	50.00
Backfilling: 49 cu. yds. at 60¢	30.00
Walls:	
235,742 Brick at $17.00	4,008.00
Extra for pilasters and cornices = 12886, at $4.25	55.00
Scaffolding at $1.00 per M Brick	236.00
Roof:	
Slate—35.75 squares at $14.50	519.00
Wood supports—7,151′ B. M. at $26.00	186.00
Framing and erecting at $15.00 per M	108.00
Iron—451# at 6¢ erected	27.00
Sheathing—3,575 Sq. Ft. at $40.00 erected	143.00

	Net construction cost.
Monitors:	
6.55 Squares slate at $14.50	95.00
892′ Wood supports at $41.00	37.00
134# Iron " at 6¢	8.00
655 Sq. Ft. Sheathing at $40.00	27.00
Flashing tin—144 Sq. Ft. at 14¢	20.00
Floors:	
Concrete—2,752 Sq. Ft. at 12¢	331.00
Wood —1,169 " " at 9¢	106.00
Concrete Partitions—3 cu. yds. at $10.00	30.00
488 Forms at $8.00 per cu. yd. Concrete	$24.00
Supports—26,932′ B. M. at $26.00	701.00
Framing and erecting at $15.00 per M	404.00
Doors:	
155 Sq. Ft. Batton at 15¢	24.00
54 " " Panel at 20¢	11.00
Placing at 5¢ per sq. ft	11.00
Windows:	
Plain—325 sq. ft. at 50¢	163.00
Box —510 " " at 75¢	383.00
Fitting and setting at 35%	191.00
Sills:	
Cut stone—34 cu. ft. at $1.75	60.00
Lintels:	
Cut stone—72 cu. ft. at $1.75	126.00
Iron—2,555# at 4.5¢	115.00
Painting:	
Brickwork—3,446 sq. ft. at 6¢	207.00
Woodwork—1,790 sq. ft. at 9¢	161.00
Pit for pipe—180 bricks at $19.00 per M	4.00
Driveway:	
587 Brick at $19.00	11.00
Wood floor 18′ B. M. at $41.00	1.00
Brick " 56 sq. ft. at 10¢	6.00
Stairs:	
19 Treads at $1.50 erected	29.00
Platforms:	
162′ B. M. at $26.00	26.00
Erection	10.00
Elevator Shaft:	
Labor sinking	225.00
Total	$9,507.00

489 *Fire Brick Shed (Building #1 C).*

This shed was erected in the year of 1903.

It is of the lean-to type, and was constructed for the storage of fire brick.

Foundations of brick in lime mortar.

Walls and roof of corrugated iron, supported by steel members.

Floor of dirt.

490 *Fire Brick Shed (Building # 1 C).*

	Net construction cost.
Clearing site	$2.00
Excavation:	
6 cu. yds. at $1.10	7.00
Foundations:	
365 Brick at $17.00	7.00
Wall:	
1.2 Squares corrugated iron at $7.00	9.00
Roof:	
2.47 Squares corrugated iron at $7.00	18.00
Iron supports—1311# at 6¢	79.00
Wood " — 51′ B. M. at $41.00	2.00
Total	$124.00

491 *Meter, Exhauster and Wash Room (Building # 3).*

This building was erected in the year of 1876.

It is of brick and wood construction, one story high, with basement, divided by partition walls into Divisions A, B, C and D.

Basement of Division A contains fire pump, and pumps for supplying the works with river water. First floor contains lockers and toilet facilities for works force.

Basement of Division B contains piping and by-passes for exhausters and tar extractor, etc. First floor of Division B contains engines and exhausters for transferring gas from Relief Holder through Purifying Boxes, etc., to Storage Holders; engines and boosters for transferring gas to outlying districts; and tar extractor for removing tar from the gas.

Basement of Division C contains automatic blow-back for the prevention of accident in the line due to excessive pressure, and piping for same.

First floor of Division C contains chemical apparatus, store room supplies, and toilet facilities for office force.

Basement of Division D contains piping and by-passes for meters and street main governors.

First floor of Division D contains desks for office force, station meters, street main governors and Photometer Room.

Foundations of rubble stone in cement mortar.

Walls of brick in lime mortar, reinforced by pilasters, cornice and watertable.

North, South, and Partition walls are parapetted and protected by cement coping.

Roof of slate resting on rough boards, the whole supported by wood trusses.

Flashing of tin.

Two ventilators of the "Star" type.

Doors are of panel construction.

Windows double sash, box frame.

Sills and lintels are of dressed stone, plain and ornamental.

Floor of Division A, basement is concrete on earth; first floor of concrete resting on matched boards supported by wood joists.

Floor of Division B, basement is of dirt; first floor is of concrete resting on matched boards and cast iron plates supported by wood joists.

Floor- of Division- C and D, basement of brick flat; first floor of double matched boards, supported by wood joists.

Stairs of wood.

All wood, structural steel and iron work painted.

492 *Meter, Exhauster & Wash Room (Building #3).*

	Net construction cost.
Clearing site	$20.00
Excavation:	
Foundations—161.28 cu. yds. at $1.10	178.00
Cellar —945.86 " " at 1.30	1,230.00
Foundations:	
Rubble stone—187.5 porches at $5.50	1,032.00
Backfilling—169 cu. yds. at 60¢	102.00
Walls:	
117,278 Brick at $17.00	1,994.00
Extra for pilasters, etc.,—1,548 brick at $4.25	7.00
Scaffolding at $1.00 per M	118.00
Emplacements:	
4,489 Brick at $17.00	77.00
Water table—dressed stone—140.11 cu. ft. at $1.75	246.00
Window sills—cut stone—11.5 cu. ft. at $1.75	21.00
6 as per sketch at $4.00	24.00
Lintels—cut stone—20.68 cu. ft. at $1.75	37.00
8 as per sketch at $20.00	160.00
Floors:	
"A" balcony—436 sq. ft. at 14¢	61.00
872.12 sq. ft. at 14¢	122.00
Timbers—654′ B. M. at $41.00	27.00
"A" basement—497 sq. ft. at 8¢	40.00
"B" timbers—600.79′ B. M. at $41.00	25.00
Floor —298.71 sq. ft. at 14¢	42.00
597.42 " " at 14¢	84.00

	Net construction cost.
Cast iron plates—3821# at 4¢	153.00
"C" timbers—486.8′ B. M. at $41.00	20.00
Floor —645 sq. ft. at 8¢	52.00
Base floor—301.8 sq. ft. at 11¢	34.00
493	
"D" timbers—960′ B. M. at $41.00	$40.00
Floor —1,272 sq. ft. at 8¢	102.00
Base floor—602.42 sq. ft. at 11¢	67.00
Roof:	
"A" wood trusses—509.65′ B. M. at $41.00	21.00
"B" 246′0″ of 1½″ pipe at 30¢	74.00
"C" wood trusses—713.51′ B. M. at $41.00	30.00
"D" " " —1,427′ B. M. at $41.00	59.00
"B" rafters —661′ B. M. at $41.00	27.00
Sheeting—2,977.76 sq. ft. at 5¢	149.00
Slate —29.776 squares at $14.50	432.00
Ventilators—2 at $9.00	18.00
Gutters—197′ at 20¢	40.00
Down spouts—60′ at 15¢	9.00
Doors:	
Panel with transom—163.99 sq. ft. at 30¢	49.00
Placing and fitting at 35%	18.00
Panel common—37.53 sq. ft. at 25¢	9.00
Placing and fitting at 35%	3.00
Batten—37.53 sq. ft. at 15¢	6.00
Placing and fitting at 35%	2.00
Windows:	
274.88 sq. ft. at 50¢	137.00
Placing and fitting at 35%	48.00
Boarded—21′ B. M. at $41.00	1.00
Stairs:	
36 treads at 50¢	18.00
Platforms—43.73′ B. M. at $41.00	2.00
.068 cu. yds. concrete at $15.00	1.00
494	
Steel Bracing:	
1,548.72# I beams at 4½¢	$70.00
152.# C. I. Brackets at 3½¢	5.00
Railing—76′—1″ pipe at 15¢	11.00
Sumps:	
"A" excavation 2.44 cu. yds. at $1.10	3.00
450 Brick at $17.00	8.00
Covers—351.33# at 3½¢	12.00
Painting:	
1,510 sq. ft. at 6¢	91.00
549 sq. ft. x 2 at 6¢	66.00
8,444 sq. ft. at 2¢	169.00
Photometer Room:	
283′ B. M. at $41.00	12.00

	Net construction cost.
Batten door—16 sq. ft. at 15¢	2.00
Painting 477 sq. ft. at 9¢	43.00
Tool Room:	
108′ B. M. at $41.00	4.00
Batten door—16 sq. ft. at 15¢	2.00
Wire screen—160 sq. ft. at 8¢	13.00
Toilet Room:	
"A"—116′ B. M. at $41.00	5.00
"C"—145.5′ B. M. at $41.00	6.00
Door—8.47 sq. ft. at 30¢	3.00
Total	$7,793.00

495 *Retort, Generator, Engine & Blower House (Building # 4).*

This building was erected in the year of 1876.

It is divided by partition walls into divisions A, B and C.

Division- A and C of one story construction.

Division B of two story construction.

Division A contains five benches of 6's, direct fire, for the manufacture of Coal Gas.

Division B contains two 6′0″ sets of Water Gas apparatus, also an elevator for conveying fuel to the operating floor.

Division C contains engines and blowers for supplying air to the Water Gas apparatus.

Foundations of rubble stone in cement mortar.

Walls of brick, lime mortar, reinforced by pilasters, cornice and watertable.

East and West walls are parapetted and protected by cement coping.

Roof of Division- A and B of corrugated iron resting on steel purlins supported by steel trusses.

Roof of Division C of corrugated iron resting on purlins of steel pipe supported by wood members.

Monitor of steel construction.

Floor, Division A of dirt.

First floor Division B of brick laid flat, cement grouted.

Second floor or operating floor of cast iron plates supported by steel members.

Floor of Division C of brick laid flat, cement grouted.

Doors of panel and batten construction.

Windows, double sash, boxed frame and casement.

Sills and lintels of dressed stone, plain and ornamental.

Stairs from street of concrete.

Stairs in Division B from first to operating floor of wood construction.

496 *Retort, Generator, Engine & Blower House (Building # 4).*

	Net construction cost.
Clearing site	$20.00
Excavation—205 cu. yds. at $1.10	226.00
Foundations (Rubble stone):	
2,600 cu. ft.= 105 perches at $5.50	578.00
Backfilling—63 cu. yds. at 60¢	38.00
Walls:	
127,715 Brick at $17.00	2,171.00
Extra for pilasters and cornices—8,900 Brick at $4.25	38.00
Scaffolding at $1.00 per M	128.00
Cement coping—29 cu. ft. at $1.00	29.00
Corrugated iron—3.01 squares at $7.00	21.00
Angle iron—79# at 6¢	5.00
Roof:	
Corrugated iron—21.47 squares at $7.00	150.00
Steel supports—6,141# at 4½¢	276.00
Wood " —58′ B. M. at $41.00	2.00
W. I. Pipe supports—54′0″—2″ at 25¢	14.00
—98′0″—1″ at 15¢	15.00
Gutter—40′0″—6″ galv. at 20¢	8.00
Downspout—17′0″—4″ galv. at 16¢	3.00
Floors:	
854 sq. ft. Brick flat at 12¢	102.00
512 " " iron at $1.50	768.00
Water table—14 cu. ft. cut stone at $1.75	25.00
Sills:	
2 cu. ft. cut stone at $1.75	4.00
5 as per sketch at $4.00	20.00
Lintels:	
6 as per sketch at $20.00	120.00
Wood—110′ B. M. at $41.00	5.00
4 cu. ft. cut stone at $1.75	7.00
497	
Doors:	
Panel common—48 sq. ft. at 25¢	$12.00
" with transom—35 sq. ft. at 30¢	11.00
Batten common—33 sq. ft. at 20¢	7.00
Labor fitting and setting at 35%	11.00
Windows:	
102 sq. ft. at 50¢	51.00
Labor fitting and setting at 35%	18.00
Stairs:	
Wood—18 treads at 50¢	9.00
Railing—39—1″ pipe at 15¢	6.00
Cut stone sill—5 cu. ft. at $1.75	9.00
Concrete—31 cu. ft. at $1.00	31.00
Painting—1,242 sq. ft. at 9¢	112.00
Total	**$5,050.00**

498 *Coal Shed, Scrubber and Condenser Room (Building # 5).*

This building was erected in the year of 1876.
It is divided by partition wall into two divisions, A and B.
It is of one story construction.
Division A contains scrubbers and condenser for the purification of gas from the Water Gas apparatus.
Division B is for the storage of fuel and contains a track for conveying fuel to the boilers.
Foundations of rubble stone in cement mortar.
Walls of brick, lime mortar, reinforced by pilasters, cornice and watertable.
East, West and Partition walls are parapetted and protected by cement coping.
Roof of corrugated iron on rough boards supported by wood rafters.
Division A has monitor of wood contsruction, roof of tin.
Floor Division A of brick laid flat, cement grouted.
Floor Division B of boards.
Building has openings but no doors.
Windows casement type.
Sills and lintels of dressed stone and steel members.
Watertable of dressed stone.

499 *Coal Shed, Scrubber & Condenser Room (Building # 5).*

	Net construction cost.
Clearing site	$20.00
Excavation—94 cu. yds. at $1.10	103.00
Foundations:	
1,304 cu. ft.— 53 perches at $5.50	292.00
Backfilling—38 cu. yds. at 60¢	23.00
Walls:	
53,081 Brick at $17.00	902.00
Extra for pilasters and cornices—5,466 Brick at $4.25	23.00
Scaffolding at $1.00 per M	53.00
Cement coping—27 cu. ft. at $1.00	27.00
Roof:	
Corrugated iron—18.16 squares at $7.00	127.00
Wood supports —2,208′ B. M. at $41.00	91.00
Sheathing—1,576 sq. ft. at $40.00	63.00
Monitor tin—87 squares at $10.00	1,019.00
" framing—198′ B. M. at $41.00	8.00
" Sheathing—97 sq. ft. at $40.00	4.00
Flashing—118 sq. ft. at 14¢	17.00
Floors:	
Brick flat—405 sq. ft. at 12¢	49.00
Wood —945′ B. M. at $41.00	39.00
Windows:	
Plain—13 sq. ft. at 50¢	7.00

	Net construction cost.
Water table—cut stone—55 cu. ft. at $1.75	96.00
Sills—cut stone—1 cu. ft. at $1.75	2.00
Lintels—wood—36′ B. M. at $41.00	1.00
iron—387# at 3½¢	14.00
Platform—542′ B. M. at $41.00	22.00
Partition—172′ B. M. at $41.00	7.00
Total	$3,009.00

500 *Boiler & Engine Room (Building # 6 A & B).*

This building was erected in the year of 1902.

It is of brick and steel construction, one story high, divided by partitions into Divisions A and B.

Division A contains boilers, boiler accessories and feed water heater, for supplying steam for Water Gas apparatus, machinery, etc.

Division B contains Water Gas condensers, engines and flowers for supplying blast to Water Gas sets.

Foundations of concrete and brick.

Walls of brick, lime mortar, reinforced by pilasters, cornice and watertable.

Floors of concrete resting on earth.

Roof of slate resting on steel purlins, supported by steel trusses.

Roof flashing of tin.

Roof Monitor of steel construction, louvres of steel, wood framing.

Roof of monitor Division B is of corrugated iron resting on steel purlins.

Roof of monitor Division A is slate resting on steel purlins.

Doors of batten and steel construction.

Windows of box and plain frame, double and single sash.

Sills and lintels of dressed stone.

All wood, structural steel and iron work painted.

501 *Boiler & Engine Room (Building # 6 A & B).*

	Net construction cost.
Clearing site	$20.00
Excavation—199 cu. yds. @ $1.10	219.00
Foundations:	
97 cu. yds. concrete @ $8.00	776.00
Forms @ $2.00 per cu. yd.	194.00
614 x 30 = 18,420 Brick @ $17.00	313.00
Backfilling—36 cu. yds. @ 60¢	27.00
Walls:	
135,661 Brick @ $17.00	2,306.00
Extra for pilasters, etc.—33,915 Brick @ $4.25	144.00
Scaffolding @ $1.00 per M	134.00

	Net construction cost.
Roof:	
Slate—29.22 squares @ $14.50	424.00
Steel trusses—10,528# @ 4¢	421.00
" purlins—16,198# @ 4¢	648.00
Flashing tin—42 sq. ft. @ 14¢	6.00
Monitor—1.94 squares galv. @ $7.00	14.00
" —1.53′ B. M. @ $41.00	6.00
"Berlin" louvres—140 sq. ft. @ 90¢	126.00
Floors:	
1,489 sq. ft. —40″ concrete @ 12¢	179.00
Doors:	
Batten—125 sq. ft. @ 15¢	19.00
Panel — 53 " " @ 20¢	11.00
Wrought iron—43 sq. ft. @ 60¢	26.00
Fitting and setting @ 35%	20.00
Windows:	
Plain—39 sq. ft. @ 50¢	19.00
Box —165 " " @ 75¢	124.00
Fitting and setting @ 35%	50.00
Sills and lintels:	
100 cu. ft. dressed stone @ $1.75	175.00
1,494# I beams @ 3½¢	52.00
Watertable—85 cu. ft. cut stone @ $1.75	151.00
Painting:	
Woodwork—1,744 sq. ft. @ 9¢	157.00
Ironwork —3,066 " " @ 3¢	92.00
Total	$6,853.00

502 *Boiler House Extension (Building # 6 C).*

This building was erected in the year 1909, the same being an extension to Boiler and Engine House, for increasing the boiler capacity of the plant.

It is of brick and structural steel, one story high.

This building contains a single boiler which in conjunction with boilers in Boiler and Engine House furnishes steam for Water Gas apparatus, engines, etc.

Foundations of concrete and brick in cement mortar.

North and West walls of brick, cement mortar, reinforced by pilasters, cornice and watertable.

East wall of structural steel covered with corrugated iron.

Roof of corrugated iron resting on steel purlins, supported by steel rafters.

Floor of brick on edge, cement grouted.

Doors of batten and panel construction.

Windows plain and box frame, single and double sash.

Sills and lintels of dressed stone.

All wood, structural steel and iron work painted.

503 *Boiler House Extension (Building # 6 C).*

	Net construction cost.
Clearing site	$10.00
Excavation—28 cu. yds. at $1.10	31.00
Foundations:	
374 cu. ft.= 14 cu. yds. at $8.00	112.00
Forms at $2.00 per yd.	28.00
3,638 Brick at $17.00	62.00
Backfilling—4 cu. yds. at 60¢	2.00
Walls:	
17,981 Brick at $17.00	306.00
Scaffolding at $1.00 per M	18.00
Channels, angles, bolts, etc.—2,423# at 4¢	97.00
4.12 Squares galv. iron at $7.00	29.00
Roof:	
5.37 squares corrugated iron at $7.00	38.00
Channel supports —1,381#	
Angle " —1,137	
Bolts, nuts, etc. — 252	
2,770# at 4¢	111.00
Zinc flashing—79 sq. ft. at 14¢	11.00
Floors:	
225 sq. ft. at 12¢	27.00
Doors:	
Panel—123 sq. ft. at 20¢	25.00
Fitting and setting—at 35%	9.00
Windows:	
Plain frame—101 sq. ft. at 50¢	51.00
Box " — 71 " " at 75¢	53.00
Fitting and setting at 35%	36.00
Sills—11 cu. ft. cut stone at $1.75	19.00
Lintels—9 cu. ft. cut stone at $1.75	16.00
346# iron at 3½¢	121.00
Painting:	
Woodwork—590 sq. ft. at 9¢	53.00
Ironwork —618 " " at 3¢	19.00
Corrugated iron—1,026 sq. ft. at 5¢	51.00
Watertable—11 cu. ft. cut stone at 11.75	19.00
Total	$1,354.00

504 *Generator House (Building # 7).*

The West portion of this building was erected in the year 1902 and extended in an Easterly direction in 1909.

It is of brick and steel construction, two stories high, and contains apparatus for the manufacture of Water Gas.

Foundations of concrete.

North, South and West walls of brick, lime mortar, reinforced by pilasters, cornice and watertable.

East wall of temporary construction, consisting of corrugated iron supported by wood framing.

Roof of West portion of slate resting on steel purlins, the whole supported by steel trusses.

Monitor of steel construction, slate roof and metal louvres.

Roof of East portion of corrugated iron resting on steel purlins, the whole supported by steel trusses.

Monitor of steel construction, corrugated iron roof and metal louvres.

First floor of concrete and brick laid flat, cement grouted.

Second floor of cast iron plates, supported by steel members.

Doors of panel and fire door construction.

Windows double sash, box frame and mullion.

Sills and lintels of dressed stone and structural steel.

Stairs from first to second floor of structural steel and wood treads.

All wood, structural steel and iron work painted.

505 *Generator House (Building # 7).*

	Net construction cost.
Clearing site	$30.00
Excavation—203.33 cu. yds. at 80¢	163.00
Foundations—134.74 cu. yds. concrete at $8.10	1,092.00
Forms at $2.00 per yard	270.00
Backfilling—66.75 cu. yds. at 40¢	267.00
Walls:	
112,698 Brick at $17.00	1,916.00
Scaffolding at $1.00	113.00
Studding—2,716′ B. M. at $41.00	112.00
Corrugated iron—16.28 sq. — at $7.00	114.00
Iron—746# at 4½¢	34.00
Corrugated iron (Monitor) 5.35 sq. — at $7.00	38.00
Watertable—52.9 cu. ft. cut stone at $1.75	93.00
Roof:	
Corrugated iron—22.26 sq. — at $7.00	156.00
Slate—29.23 sq. — at $14.50	424.00
Steel supports—54,518.5# at 4½¢	2,454.00
Ridge roll—93′6″ at 20¢	19.00
Louvres—500 sq. ft. at $41.00	21.00
Gutters—56′ at 20¢	11.00
Downspouts—56′ at 16¢	9.00
Flashing—117 sq. ft. at 14¢	17.00
Floors:	
Concrete—258.75 sq. ft. at 12¢	31.00
Vitr. brick—2,148 sq. ft. at 15¢	322.00
Iron—2,967.18 sq. ft. at $1.50	4,451.00
Doors:	
Panel—153.25 sq. ft. at 20¢	31.00
Batten—276 " " at 15¢	42.00
Labor at 35%	**26.00**

	Net construction cost.
Windows:	
Box—1,000 sq. ft. at 75¢	750.00
Mullioned—304.25 sq. ft. at 60¢	183.00
Labor at 35%	327.00
Transoms:	
61 sq. ft. at 75¢	46.00
Labor at 35%	16.00
506	
Sills:	
48.98 cu. ft. dressed stone at $1.75	$86.00
Lintels:	
95.90 cu. ft. dressed stone at $1.75	168.00
1,807# iron at 4½¢	82.00
108′ B. M. at $41.00	5.00
Stairs:	
46 iron Treads at $2.25	104.00
Painting:	
38,181.26 sq. ft. iron at 2¢	764.00
3,857.68 " " wood at 6¢	231.00
112′ Gutters and downspouts at 3¢	4.00
Steel framing supports—5,904.29# at 4½¢	266.00
Turbine Room:	
Studding—60′ B. M. at $41.00	3.00
Tin sheathing—285.18 sq. ft. at 14¢	40.00
Doors:	
26 sq. ft. Batten at 15¢	4.00
Labor at 35%	2.00
Total	$15,336.00

507 *Runway & Coal Shed (Building # 8 B).*

This runway was erected in the year 1901.

It is of frame construction, supported by steel and wood members, extending from Generator House to Coal Shed.

This runway is used for conveying generator fuel from Coal Shed to Operating Floor of Generator House.

On North end of Runway, a direct acting steam hydraulic elevator is located for raising the fuel from Coal Shed floor to floor of runway.

Walls of corrugated iron on wood framing.

Roof of corrugated iron on wood purlins, supported by wood rafters.

Floor of plank supported by wood joists and structural members.

Windows single sash stationary.

All wood, structural steel and iron work painted.

Coal Shed (Building # 8 A).

This building was erected in the year 1896.

It is of frame construction resting on brick foundations, building is one story high, and excavated to a depth of eight feet below ground level. It is used for the storage of general fuel.

Foundations of brick in cement mortar.

Walls of plank, matched on heavy framing.

Roof, tar felt and gravel on wood sheathing supported by wood purlins, on wood rafters, the whole being shored by wood struts extending from basement floor to underside of rafters.

Roof has three skylights of plain sash in wood frame.

Floor of tar and breeze.

Doors of batten construction.

Ventilators of wood slats of conventional type.

508 *Coal Shed (Building # 8 A).*

	Net construction cost.
Clearing site	$20.00
Excavation—1,810 cu. yds. at $1.30	2,353.00
Foundations:	
384 x 21 = 8,064 Brick at $17.00	137.00
Backfilling—38 cu. yds. at 60¢	29.00
Walls:	
87,900 Brick at $17.00	1,494.00
Scaffolding at $1.00 per M.	88.00
Framing—34,181′ B. M. at $46.00	1,572.00
Sheathing—5,555 sq. ft. at $40.00	22.00
Roof—5,555 sq. ft. at $4.50 per square	250.00
Uprights:	
Excavation—26 cu. yds. at $1.30	34.00
Piers—8,190 brick at $17.00	139.00
Floor—5,281 sq. ft. at 8¢	422.00
Doors—Batten common—203 sq. ft. at 15¢	30.00
Windows—(Ventilators)—228 sq. ft. at 20¢	45.00
Fitting doors and windows at 35%	26.00
Gutters—75′—6″ galv. at 20¢	15.00
Painting—4,875 sq. ft. at 2¢	98.00
Total	$6,974.00

509 *Runway & Coal Shed (Building # 8 B).*

Floor:	
Iron supports—1,011# at 4½¢	$45.00
Wood " —1,277′ B. M. at $41.00	52.00
972′ B. M. at $41.00	40.00
Walls:	
Studding—389′ B. M. at $41.00	16.00
Corrugated iron—6.04 squares at $7.00	42.00

	Net construction cost.
Roof:	
Corrugated iron—4.25 squares at $7.00	30.00
Supports—602′ B. M. at $41.00	25.00
Flashing tin—17.42 sq. ft. at 14¢	2.00
Cornice—box—89′0″ at 50¢	45.00
Gutters—41′6″ galv. at 20¢	8.00
Windows:	
117 sq. ft. at 50¢	58.00
Fitting and setting at 35%	20.00
Painting 1,146 sq. ft. corrugated iron at 5¢	57.00
Total	$440.00

510 *Smith, Carpenter Shops & Storeroom (Building* #10).

This building was erected in the year of 1876.

It is of brick and wood construction, one story high, divided by partition walls into divisions A, B, C, and D.

Division A contains Carpenter shop.

Division B contains Store Room for distribution supplies, etc.

Division C contains Store Room for distribution supplies and tools.

Division D contains Smith and Machine Shop.

Foundations of concrete and brick in cement mortar.

Walls of brick in cement mortar, reinforced by cornice, pilasters and watertable.

North and South walls parapetted and protected by cement coping.

South portion of roof, tin, North portion tar felt, both resting on wood sheathing, the whole supported by wood trusses.

Roof flashing of tin.

Dormers of wood construction with stationary sash.

Floors, divisions A and C of concrete on earth. Division B of brick laid flat cement grouted. Division D of brick on edge, cement grouted.

Doors of panel and batten construction.

Windows plain and boxed frame, single and double sash.

Sills and lintels of cement.

Stairways of cement and wood construction.

Pipe racks and bins of wood.

511 *Smith, Carpenter Shops, and Store Room (Building* #10).

	Net construction cost.
Clearing site	$20.00
Excavation—227 cu. yds. at $1.10	250.00
Foundations:	
906 cu. ft. = 34 cu. yds. at $8.00	272.00

	Net construction cost.
Forms at $2.00 per yd	68.00
3,045 Brick at $17.00	52.00
Backfilling—84 cu. yds. at 60¢	50.00
Walls:	
184,488 Brick at $17.00	3,136.00
Extra for pilasters, etc., 17,566 Brick at $4.25	75.00
Scaffolding at $1.00 per M	184.00
Cement coping—54 cu. ft. at 90¢	49.00
Emplacements—312 Brick at $17.00	5.00
Watertable—53 cu. ft. cement at 90¢	48.00
Roof:	
Tin—31.62 squares at $10.50	332.00
Tar felt—37.95 squares at $4.50	171.00
Supports—9,265′ B. M. at $41.00	380.00
1,064# W. I. at 4½¢	48.00
Flashing ton—261 sq. ft. at 14¢	35.00
Sheathing—6,958 sq. ft. at $40.00	278.00
Floors:	
Brick on edge—726 sq. ft. at 14¢	102.00
" flat—2,112 sq. ft. at 12¢	253.00
Wood—4,354 sq. ft. at $41.00	179.00
Concrete—2,984 sq. ft. at 12¢	358.00
Supports—3,479′ B. M. at $41.00	143.00
Doors:	
Panel finished—40 sq. ft. at 22¢	9.00
" common—148 sq. ft. at 20¢	30.00
Batten " —174 sq. ft. at 15¢	26.00
Fire Und. Standard—26 sq. ft. at $1.25	33.00
Windows:	
Box—352 sq. ft. at 75¢	264.00
Plain—57 " " at 50¢	24.00
Fitting and setting at 35%	101.00
512	
Dormer—1,586′ B. M. @ $41.00	$65.00
Sheathing—732 sq. ft. @ $40.00	29.00
Tar felt—7.32 squares @ $4.50	33.00
Windows—192 sq. ft. @ 50¢	96.00
Fitting and setting @ 35%	34.00
Sills:	
30 cu. ft. cement @ 90¢	27.00
Lintels:	
36 cu. ft. cement @ 90¢	32.00
276# cast iron @ 3½¢	10.00
Painting:	
Woodwork—1,980 sq. ft. @ 9¢	178.00
Brickwork—1,836 sq. ft. @ 6¢	110.00
Stairs:	
Concrete—24 cu. ft. @ $1.50	36.00
Wood—26 treads @ $1.00	26.00

	Net construction cost.
Platform—487′ B. M. @ $41.00	20.00
Brick bin—240 brick @ $17.00	4.00
Brick platform:	
Excavation—4 cu. yds. @ $1.10	4.00
Foundation—1 cu. yd. concrete @ $8.00	8.00
77′ B. M. @ $41.00	3.00
Cement facing—22 cu. ft. @ 90¢	20.00
5,691 Brick @ $17.00	97.00
Brick bin—225 brick @ $17.00	4.00
Wood partitions—859′ B. M. @ $41.00	35.00
Auto platform:	
Concrete—6 cu. yds. @ $8.00	48.00
Forms—1,103′ B. M. @ $41.00	45.00
Cement floor—140 sq. ft. @ 12¢	17.00
Wood " —124′ B. M. @ $41.00	5.00
I beams—104# @ 6¢	6.00
Bin for Ice box:	
.2 cu. yds. concrete @ $8.00	2.00
Forms—46′ B. M. @ $41.00	2.00
Driveway—.2 cu. yds. concrete @ $8.00	2.00
Bench, closets, shelving—5,266′ B. M. @ $41.00	216.00
Stairs—21 treads @ $1.50	32.00
Total	$8,221.00

513 *Barrel Oil Store House (Building #11).*

This building was erected in the year 1909.

It is a one story concrete structure, and is used for storing lubricating oils, paints, gasoline, etc.

Foundations and floor of concrete.

Walls and roof of reinforced concrete.

Doors of batten construction, metal sheathed for fire protection, painted.

514 *Barrel Oil Store House (Building # 11).*

	Net construction cost.
Clearing site	$10.00
Excavation—11.57 cu. yds. @ 80¢	10.00
Foundations—2.62 cu. yds. concrete @ $8.10	21.00
Forms @ $3.00 per yd	8.00
Walls and roof—9.39 cu. yds. concrete @ $8.10	76.00
Forms @ $3.00	28.00
Emplacement—210 Brick @ $17.00	4.00
Floor—268.81 sq. ft. concrete @ 12¢	32.00
Benches—3.49 cu. yds. sand @ $1.00	4.00
Steps—4 @ $1.50	6.00

	Net construction cost.
Doors—39.96 sq. ft. Batten @ 15¢	6.00
Labor @ 25%	2.00
Closet—66′ B. M. @ $41.00	3.00
Total	$210.00

515 *Pump House* (*Building* # 12).

This building was erected in the year 1910.

It is of brick, steel and concrete construction, one story high, divided by partition wall into Divisions A and B.

Division A contains pumps for tar and circulating systems.

Division B contains pump for supplying oil to the Water Gas sets.

Foundations of concrete and brick in cement mortar.

Walls of brick in lime mortar, reinforced by pilasters, cornice and watertable.

Roof of reinforced concrete, supported by steel purlins, it has two ventilators of the "Star" type, and two skylights of wire glass in metal frames.

Doors of panel construction.

Windows of single sash, plain frames.

Sills and lintels of dressed stone and steel members.

Stairs and landing of cast iron and steel construction.

Floors of concrete on cinder.

All wood, structural and ironwork painted.

516 *Pump House* (*Building* # 12).

	Net construction cost.
Clearing site	$5.00
Excavation:	
Cellar—41.18 cu. yds. @ $1.10	45.00
Foundations—8.7 cu. yds. @ $1.10	10.00
Foundations:	
137.99 cu. ft.=5.11 cu. yds. @ $8.00	41.00
Backfilling—5.26 cu. yds. @ 60¢	3.00
Walls:	
17,443 Brick @ $17.00	297.00
Scaffolding @ $1.00 per M	17.00
Extra for pilasters, etc.—1,291 Brick @ $4.25	5.00
Roof:	
Reinforced concrete—356 sq. ft. @ 30¢	107.00
Supports—576# @ 4½¢	26.00
Skylight—280 sq. ft. @ 50¢	140.00
Ventilators—2 @ $7.00	14.00
Floor—4″ concrete—225.7 sq. ft. @ 12¢	27.00

	Net construction cost.
Doors—Panel—45.15 sq. ft. @ 20¢	9.00
Fitting and setting @ 35%	13.00
Doors:	
Sills—7.78 cu. ft. dressed stone @ $1.75	14.00
Lintels—420# iron @ 3½¢	15.00
Stairs—iron—6 treads @ $1.50	9.00
Windows—73.59 sq. ft. @ 50¢	37.00
Fitting and setting @ 35%	13.00
Platform—iron—13.92 sq. ft. @ $1.50	21.00
Painting—237.3 sq. ft. @ 9¢	22.00
Total	$880.00

517 *Oil Pump House (Building # 13).*

This building was erected in the year 1907, and remodelled in 1909.

It is a one story brick structure and contains pump for unloading oil, and loading tar.

Foundations of concrete and brick in cement mortar.

North, East and West walls are parapetted.

Floor of concrete on earth.

Roof of slate resting on steel pipe.

Door of steel plate.

Foundations of concrete and brick in cement mortar.

518 *Pump House (Building # 13).*

	construction cost.
Clearing site	$10.00
Excavation—8.47 cu. yds. @ 80¢	7.00
Foundations—.37 cu. yds. @ $12.00	5.00
272 Brick @ $17.00	5.00
Backfilling—2.63 cu. yds. @ 40¢	1.00
Walls:	
6,531 Brick @ $17.00	111.00
Extra for cornices—255 @ $4.25	1.00
Scaffolding @ $1.00 per M	7.00
Roof—1.04 squares slate @ $14.50	15.00
Supports—163′ @ $41.00	7.00
Floor—54.78 sq. ft. concrete @ 12¢	7.00
Door—fire—25.85 sq. ft. @ $1.50	39.00
Labor @ 35%	14.00
Total	$229.00

519 *Meter House (Building # 14).*

This building was erected in the year 1909.

It is a one story structure of bricks, steel and concrete construction.

It contains station meter for measuring the gas.

Foundations of concrete and brick in cement mortar.

Walls of brick in lime mortar, reinforced by cornice, pilasters and watertable.

Roof of reinforced concrete, supported by steel purlins. It has a ventilator of the "Star" type.

Floor of concrete, on brick on edge.

Door of batten construction.

Windows double sash, box frame.

Sills and lintels of dressed stone.

All brick, wood, structural steel and iron work painted.

520 *Meter House (Building # 14).*

	Net construction cost.
Clearing site	$10.00
Excavation—32.5 cu. yds. @ 80¢	26.00
Foundations—7.06 cu. yds. concrete @ $8.10	57.00
Forms @ $3.00	21.00
Backfilling—10.34 cu. yds. @ 40¢	4.00
Walls:	
48,358 Brick @ $17.00	822.00
Extra for 2,116 Brick @ $4.25	9.00
Roof:	
Concrete—704 sq. ft. @ 12¢	85.00
Iron supports—2,507.96# @ 4½¢	113.00
Tar felt—7 sq. — @ $4.50	32.00
Floors:	
Concrete—466.61 sq. ft. @ 12¢	56.00
Brick on edge—466.61 sq. ft. @ 13¢	61.00
Door—Batten—31.61 sq. ft. @ 15¢	5.00
Labor @ 35%	2.00
Windows—Plain—219.24 sq. ft. @ 50¢	110.00
Labor @ 35%	39.00
Iron angles—1,600.04# @ 4½¢	72.00
Sills—9.52 cu. ft. dressed stone @ $1.75	17.00
Lintels—14.77 cu. ft. dressed stone @ $1.75	26.00
Ventilator—Star	9.00
Total	$1,576.00

521 *Stable (Building # 15).*

Division B was erected in the year 1883.

Division A and C were added in the year 1897.

This building is divided into three Divisions, A, B and C.

Division- A and B contain stalls for the accommodation of horses. for distribution purposes.

Division C contains wagons also for distribution purposes.

Division B of two story construction.

Divisions A and C of one story construction.

Foundations of brick in cement mortar.

Division- A, B and C are of frame construction, weather boarded with rough lumber, placed vertically and stripped.

Roof of Divisions A and B of rubberoid on rough boards resting on wood rafters.

Ventilator of Division B is of wood construction, with openings of conventional type. Ventilator extends from second floor to openings above roof.

Roof of Division C is of shingle on rough boards supported by wood rafters.

First floor of Division B of plank resting on wood joists.

Second floor of matched boards also resting on wood joists.

Floor of Division A of concrete on earth.

Floor of Division C of brick on edge, and brick laid flat, cement grouted, and concrete on earth.

Doors of batten construction.

Windows of single sash, plain frame stationary.

522 *Stable (Building # 15).*

	Net construction cost.
Clearing site	$20.00
Excavation—59.8 cu. yds. @ 80¢	48.00
Foundations:	
10.87 Perches @ $5.50	60.00
11,607 Brick @ $17.00	198.00
Backfilling—28.48 cu. yds. @ 40¢	12.00
Framing—6,584′ B. M. @ $41.00	270.00
Roof:	
Shingles—24.52 sq. — @ $9.00	221.00
Rubberoid—11.84 sq. — @ $6.00	71.00
Sheathing—3,636 sq. ft. @ $41.00	149.00
Supports—2,057′ B. M. @ $41.00	85.00
Ventilator—225′ B. M. @ $41.00	10.00
Floors:	
4″ Concrete—516 sq. ft. @ 12¢	62.00
Brick on edge—604 sq. ft. @ 12¢	85.00
" flat—945 sq. ft. @ 12¢	114.00
Wood—3,359′ B. M. @ $41.00	138.00
Harness rooms:	
"A"—144′ B. M. @ $41.00	6.00
"B"—108′ B. M. @ $41.00	5.00
Stalls—"A" and "B"—1,371′ B. M. @ $41.00	57.00
Feeding cribs:	
4½ @ $10.00	45.00
4 @ $8.00	32.00

	Net construction cost.
Feed Boxes—372′ B. M. @ $41.00	16.00
Tin lining—130 sq. ft. @ 14¢	18.00
Doors—215 sq. ft. Batten @ 15¢	33.00
Labor—@ 35%	12.00
Windows:	
94 sq. ft. Plain @ 50¢	47.00
Labor @ 35%	17.00
Painting:	
3,099 sq. ft. exterior @ 9¢	279.00
2,601 sq. ft. interior @ 6¢	156.00
Total	$2,266.00

523 *Boiler House* (*Building* # 16).

This building was erected in the year 1906.

It is of structural steel and galvanized iron construction, one story high.

It contains a holder for the purpose of supplying steam for holders and buildings on the property on which it is located.

Foundations are of concrete.

Walls of corrugated iron on steel framing.

Roof of corrugated iron on steel purlins, supported by steel rafters, it has skylight of wire glass in wooden frame.

Portion of floor is cement and portion of cinder.

Doors of batten construction, metal sheathed.

Windows single sash, plain frame.

Sills and lintels of wood.

All wood, structural steel and iron work painted.

524 *Boiler House* (*Building* # 16).

	Net construction cost.
Clearing site	$20.00
Excavation—6.8 cu. yds. @ 80¢	6.00
Foundations:	
4.89 cu. yds. @ $8.10	40.00
Watertable—26.26 cu. ft. concrete @ $10.00	10.00
Iron framing—8,644.24# @ 4½¢	389.00
Walls:	
13.86 squares corrugated iron @ $7.00	97.00
Roof—6 squares corrugated iron @ $7.00	42.00
Floor—231.72 sq. ft. cement and cinder @ 12¢	28.00
Bin—408′ B. M. @ $41.00	17.00
Facial strip—21′ B. M. @ $41.00	1.00
Doors—Fire—79.56 sq. ft. @ $1.50	120.00
Labor @ 35%	42.00
Windows—66 sq. ft. box @ 75¢	50.00

	Net construction cost.
64.68 sq. ft. Plain—@ 50¢	33.00
Labor @ 35%	29.00
Steps—3.47 cu. ft. dressed stone @ $1.75	7.00
Skylight—30 sq. ft. @ 75¢	23.00
Ridge roll—14'4" @ 20¢	29.00
Total	$983.00

525 *Fire Brick Storage* (*Building* # 17).

This building was erected in the year 1905.

It is a one story frame structure and used for the purpose of storing fire brick.

Walls of rough boards on wood studding, covered with tar felt paper.

Roof of tar felt on rough boards resting on wood rafters.

Door of batten construction.

526 *Fire Brick Storage House* (*Building* # 17).

	Net construction cost.
Framing:	
1,731' B. M. @ $41.00	$71.00
Covering:	
11 squares tar felt @ $4.50	50.00
Doors:	
Batten—48 sq. ft. @ 15¢	8.00
Labor	3.00
Total	$132.00

527 *Fire Hose House* (*Building* # 35).

This building was erected in the year of 1905.

It is of one story frame structure and contains a hose reel and hose for fire protection.

Walls of matched boards on wood studding.

Roof of tar felt on matched boards, supported by wood rafters.

Floor of dirt.

Door of batten construction.

Wood work painted.

528 *Fire Hose House* (*Building* # 35).

	Net construction cost.
Walls and framing—324′ B. M. @ $41.00	$14.00
Doors—22.28 sq. ft. Batten @ 15¢	4.00
Labor	2.00
Roof—1.5 squares tar felt @ $4.50	7.00
157.52′ B. M. @ $41.00	7.00
Total	$34.00

529 *Coke Shed* (*Building* # 53).

This building was erected in the year 1887.
It is of frame construction resting on brick piers.
This building was formerly used for manufacturing purposes but at this time is used for the storage of generator fuel.
Walls of boards running vertically and stripped, the same supported by studding and rails, which forms framing of building.
Roof of shingles on wood sheathing, supported by wood rafters.

530 *Coke Shed* (*Building* # 53).

	Net construction cost.
Clearing site	$20.00
Excavation—1 cu. yd. @ $1.10	1.00
Foundations:	
1′1″ x 1′6″ x 22½ x 12=540 @ $17.00	9.00
Framing—2,613′ B. M. @ $41.00	87.00
Sheathing—2,736 sq. ft. @ $41.00	112.00
Roof:	
19.87 squares shingle @ $9.00	179.00
1,987 sq. ft. sheathing @ $41.00	81.00
Floor—tar and breeze—1,422 sq. ft. @ 5¢	71.00
Stack:	
Excavation—½ cu. yd.	1.00
Rubble stone—2 perches @ $5.50	11.00
420 Brick @ $17.00	7.00
Cap stone—3 cu. ft. @ $1.75	5.00
Total	$584.00

531 *Coke Rack* (*Building* # 54).

This rack was erected in the year 1907.
It is of wood construction.
It is used for fuel storage purposes.
The sides are plank.
The posts are of heavy timbers imbedded in the ground.

532 *Coke Rack (Building # 54).*

	Net construction cost.
Excavation—12 cu. yds. @ 80¢	$10.00
Backfilling—11 cu. yds. @ $40¢	5.00
Framing—1,419′ B. M. @ $41.00	59.00
Total	$74.00

533 *Oil Barrel Store House (Building # 55).*

This building was erected in the year.

It is a one story frame structure and is used for storing empty oil barrels.

Building rests on rubble stone piers.

Walls are slat construction on wood studding.

Roof of tar felt on rough boards supported by wood rafters.

Floor of rough boards supported by wood joists.

Door of batten construction.

534 *Oil Barrel Store House (Building # 55).*

	Net construction cost.
Piers—3.75 cu. ft. rubble stone	$4.00
Framing—186.83′ B. M. @ $41.00	8.00
Walls—306.75′ B. M. @ $41.00	13.00
Floors—200′ B. M. @ $41.00	8.00
Supports—73.70′ B. M. @ $41.00	3.00
Roof—807.48′ B. M. @ $41.00	33.00
Supports—40.2′ B. M. @ $41.00	2.00
Tar felt—2.15 sq. — @ $4.50	10.00
Sheathing—215 sq. ft. @ $41.00	9.00
Door—19.5 sq. ft. Batten @ 15¢	3.00
Labor @ 35%	1.00
Total	$94.00

535 *Des Moines Gas Office.*

When the New Building on 7th Avenue, between Locust and Grand was nearing completion, the Des Moines Gas Company made certain additions and improvements in the basement and on the 1st floor, suitable to their requirements, these additions and improvements consisting of partitions, counters, lockers, drawers, stationery desks, cages and certain ornamental work consisting of column casings, wainscoting, baseboards, etc. The greater portion of the wood work is of quartered oak, mission style, the partitions being finished with brass gril-, and chipped glass.

The baseboards are of marbel with brass framed ventilators.

These improvements were made in the years 1909 and 1910.

536 *West Side Office.*

	Net construction cost.
Improvements named on preceding page	$14,000.00

537 EXHIBIT H.

538 *Works Equipment.*

		Net construction cost.
Building # 1 A & B:		
1—Steam hydraulic elevator, 8′ x 8′ plat. (Installed 1893.)		$290.00
4—C. I. purifying boxes—7′ x 20′ x 20′ with cover, hoist and center seal. (Installed 1905.)		19,600.00
1—Link-Belt Engrg. Co. oxide conveyor and 5″ x 6″ vertical engine. (Installed 1905.)		1,050.00
327′6″ C. I. pipe @ 4½¢ per lb.		1,597.00
Building # 3:		
Excavation—27.08 cu. yds. @ $1.25	$30.00	
52,778 Brick @ $19.00	1,003.00	
46.264 cu. yds. concrete @ $10.00	463.00	
Forms @ $3.00 per cu. yd.	139.00	
		1,635.00
1—60″ Goodwin bar photometer	$550.00	
1—American Meter Co. bar photometer	350.00	
1—Goodwin bar, U. G. I. 60″ photometer	350.00	
1 Pentane lamp # 22 (Installed 1900.)	110.00	
		1,360.00
1—Pentane lamp # 22	$110.00	
1—CO_2 apparatus	18.00	
1—18″ x 18″ x 18″ Freezing coil	30.00	
2—stop watches	20.00	
1—5′ Wet meter	55.00	
1—Hygrometer	50.00	
1—Barometer	35.00	
1—Transit	230.00	
2—Tee squares	3.00	
1—Case 5 test tubes	1.00	
1—Medicine chest	25.00	
3—Sulphide tests	80.00	
1—Orsat	30.00	
1—Tar still	30.00	
2—Double metal lockers (Installed 1905.)	20.00	
		737.00

539

		Net construction cost.
1—8′0″ x 8′0″ Goodwin meter with Hinman drum and 10″ connections (Installed —.)		$2,605.00
1—8′0″ x 7′6″ American meter with Hinman drum... (Installed 1905.)		2,405.00
1—16″ Connelly automatic governor with 24″ connections (Installed 1896.)		850.00
1—24″ Connelly automatic governor with 24″ connections (Installed 1903.)		1,650.00
1—Stationary washstand	$20.00	
1—Shower bath	10.00	
1—Flush closet and tank	25.00	
1—3′6″ x 4′6″ Safety blow back	390.00	
1—4″ Stroke hand drip pump	3.00	
(Installed 1905.)		448.00
1—# 8 Wilbraham Green exhauster with 16″ connections and 10″ x 12″ N. Y. Safety engine (Installed 1909.)		2,080.00
1—# 7 Root's exhauster with 16″ connections, Huntoon governor and 40 H. P. 10″ x 9″ N. Y. Safety engine (Installed 1895.)		1,687.00
1—# 7 Root's exhauster, same as above (Installed 1898.)		1,687.00
2—# 5 Wilbraham Green high pressure pushers, 10″ connections and 2 40 H. P., 9″ x 10″ N. Y. Safety engines (Installed 1906.)		2,020.00
1—3′6″ diam. x 6′ 11″ P. & A. tar extractor with 20″ connections (Installed 1905.)		1,716.00

540

1—4′ x 2′ Work bench	$10.00	
1—4″ Vise	4.00	
1—3′0″ diam. x 6′ 0″ tank	45.00	
5—Stationary washstands	100.00	
2—Flush closets	50.00	
14—Double metal lockers	140.00	
1—Enamel bath tub	35.00	
(Installed 1905.)		$384.00
1—7½″ x 5″ x 8″ Buffalo duplex fire pump.. (Installed 1895.)	193.00	
1—10″ x 6″ x 10″ Warren duplex pump...	285.00	
1—Vertical pump (9 x 12 x 9 Davidson).... (Installed 1899.)	320.00	
188′0″— 8″ C. I. pipe @ 4½¢ per lb.	$356.00	

		Net construction cost.
166′0″—10″ " " @ " " "	417.00	
364′0″—16″ " " @ " " "	1,774.00	
19′0″—20″ " " @ " " "	129.00	
48′0″—24″ " " @ " " "	441.00	
		3,117.00
Building # 4:		
Excavation—32 cu. yds. @ $1.25.....	$40.00	
Concrete—34 1/7 cu. yds. @ $10.00.....	340.00	
Forms @ $3.00 per yard.....	102.00	
		482.00
1—40 H. P. 8″ x 19″ horizontal Payne engine ..... (Installed 1899.)	$660.00	
1—15 H. P. 6″ x 8″ horizontal Payne engine (Installed 1887.)	255.00	
Countershafting and belting.....	90.00	
2—# 6 Sturtevant blowers.....	220.00	
		1,125.00
2—6′ x 6′ x 6′ U. G. I. W. G. sets..... (Installed 1899.)		11,791.00
541		
1—Steam hydraulic elevator.....	$450.00	
1—Coke charging buggy..... (Installed 1905.)	60.00	
		$510.00
5—Half-depth benches 6's with 14″ x 23″ retorts..... (Installed 1899.)		10,800.00
Building # 5:		
Excavation—9 cu. yds. @ $1.25.....	$11.00	
14,515 Brick @ $19.00.....	276.00	
2—cu. yds. concrete @ $ 10.00.....	20.00	
Forms @ $3.00.....	6.00	
		313.00
1—# 12 R. H. Switch 140′ of straight and curved track, 1 52″ turntable and connections and 2 roller bearing tip charging cars..... (Installed 1905.)		935.00
Building # 6 A & B:		
Excavation 67 2/3 cu. yds. @ $1.25.....	$75.00	
Concrete 52 cu. yds. @ $10.00.....	520.00	
Forms @ $3.00 per yard.....	156.00	
Brick 1,344 @ $19.00.....	26.00	
Backfilling 7¼ cu. yds. @ 70¢.....	5.00	
		782.00
2—8′6″ diam. x 22′ 0″ condensers with 20″ connections. (Installed —.)		5,074.00
2—55 H. P.,10″ x 10″ American Ball engines	$1,760.00	

		Net construction cost.
1—20 gal. Cross oil filter	50.00	
2—½ pint Detroit lubricators	25.00	
86′0″ Double belt @ $4.50	387.00	
2—# 8 Ex. heavy Sturtevant blowers	800.00	
		3,022.00
138′0″—20″ C. I. @ 4½¢	$912.00	
32′0″—16″ " @ 4½	156.00	
		1,068.00
542		
2—125 H. P. Phœnix H. R. T. boilers—72″ x 18′0″	$3,000.00	
1—Steel stack 34″ x 80′0″	200.00	
1—125 H. P. Murray H. R. T. boiler	1,500.00	
1—Steel stack—34″ x 80′0″	200.00	
1—9″ x 5¼″ x 12″ Davidson simplex boiler feed pump	268.00	
1—Feed water heater	180.00	
1—2″ American injector	95.00	
Boiler supports—3,248# @ 5¢	162.00	
(Installed 1900.)		$5,605.00
Building # 6 C:		
Excavation—15 cu. yds. @ $1.25	$19.00	
Concrete—16 cu. yds. @ $10.00	160.00	
Forms @ $3.00	48.00	
		227.00
1—125 H. P. Phœnix H. R. T. boiler 72″ x 18′0″	$1,500.00	
1—Steel stack—34″ x 80′0″	200.00	
1—American injector	48.00	
(Installed 1905.)		1,748.00
Building # 7:		
Excavation—349.64 cu. yds. @ $1.25	$437.00	
Foundations—129,692 brick @ $17.00	2,205.00	
Concrete—107.73 cu. yds. @ $10.00	1,087.00	
Forms @ $2.00	217.00	
		3,946.00
2—8′6″ D. S. Lowe sets	$17,600.00	
(Rebuilt 1910.)		
1—10′8″ D. S. Lowe set	16,000.00	
1—Vapor extractor 2′6″ x 7′ x 7′0″ and 3′0″ x 6′0″ seal pot	800.00	
		34,400.00
2 Double metal lockers	$14.00	
1—# 500 Fairbanks scale	30.00	
1—# 300 Bristol elec. pyrometer	105.00	
8—McNeill charging barrows	480.00	

		Net construction cost.
1—98 H. P. C. 3 turbine and # 8 Sturtevant blower	3,200.00	
1—# 1,130 Fairbanks scale	120.00	
		3,949.00
543		
Building # 8 A:		
1—Fairbanks 6′ x 5′ plat. scale		$150.00
Building # 8 B:		
1—Steam hydraulic elevator (Installed 1896.)		1,600.00
Building # 10:		
Concrete 1 cu. yd. @ $10.00	$10.00	
Forms @ $3.00	3.00	
Brick 68 @ $19.00	1.00	
		14.00
1—20″ Buffalo Forge blower	$20.00	
1—5″ x 6″ Payne horizontal engine	180.00	
		200.00
1—# 3 Hoefer Co. drill press	$75.00	
1—14″ x 6′0″ Reed auto. lathe	325.00	
1—3″ x 20″ belted grindstone	15.00	
1—2″ x 14″ " emery wheel	15.00	
1—3′ diam. x. 2′6″ Smith forge	25.00	
1—135# anvil	15.00	
1—140# "	15.00	
2—6″ Bench vises	18.00	
1—Gas solder iron heater	4.00	
1—¾″ to 2″ Curtis pipe machine	125.00	
Countershaft and belting (Installed 1905.)	190.00	
		822.00
Building # 12:		
2—6″ x 7″ x 10″ Davidson simplex water pumps	$420.00	
1—4″ x 5″ x 8″ Davidson simplex oil pump.	150.00	
1—6″ x 7″ x 10″ Davidson simplex drip pump (Installed 1909.)	420.00	
		990.00
1—4½″ x 3¼″ x 6″ Davidson simplex oil pump	$105.00	
1—4½″ x 3¼″ x 6″ Davidson simplex tar pump	105.00	
(Installed 1901.)		210.00
544		
1—5¼″ x 3½″ x 5″ Warren duplex tar pump (Installed 1899.)		$125.00

		Net construction cost.
1—3½" x 2½" x 4" Davidson simplex drip pump (Installed 1905.)	70.00	
Building # 13:		
Excavation—.51 cu. yds. @ $1.25	$1.00	
Foundations—485 brick @ $19.00	9.00	
1—6" x 8" x 12" Davidson oil pump		490.00
Building # 14:		
Excavation—24.67 cu. yds. @ $1.25	$31.00	
Foundations—6.05 cu. yds. @ $10.00	61.00	
Forms @ $3.00	18.00	
Brick—3,713 @ $19.00	71.00	
Backfilling—6.5 cu. yds. @ 60¢	4.00	
		185.00
1—14' x 14' American sta. meter		8,400.00
27'9"—24" C. I. @ 4½¢ per lb.	$255.00	
3—24" Valves @ $114.00	342.00	
2—24" Tees @ 6¢ per lb	164.00	
3—24" Bends @ 6¢ per lb	109.00	
		870.00
Building # 16:		
Excavation—12.07 cu. yds. @ $1.25	$16.00	
Foundations—8.29 cu. yds. @ $10.00	83.00	
Forms @ $3.00	25.00	
		124.00
Concrete slab—277.62 sq. ft. @ 12¢	$33.00	
Brick on edge—277.62 sq. ft. @ 13¢	366.00	
		69.00
1—60 H. P. Phœnix H. R. T. boiler 54" x 16', erected 1907	$840.00	
1—27" x 80' steel stack	170.00	
1—# 80 World Injector	45.00	
		1,055.00
545		
Gauges:		
6—Bristol press recording	$300.00	
1—8" U	20.00	
4—6" U	60.00	
6—18" U	60.00	
2—28" U	50.00	
1—120# Steam	45.00	
2—200# "	110.00	
5—20" U	60.00	
9 Thermometers @ $17.50	158.00	
		$863.00

		Net construction cost.
Fire Protection:		
4—Keystone extinguishers	$80.00	
4—Fire pails	4.00	
1—Hose reel	35.00	
1—2" Nozzle 2'6"	20.00	
200'—2" Lined hose @ 75¢	150.00	
100'—2" " " @ 75¢	75.00	
2—2" Nozzles 10"	24.00	
1—Barrel	1.00	
3—Safety fire buckets	6.00	
1—Crest watermeter and flanges	20.00	
1—Fire Alarm box	12.00	
		427.00
Miscellaneous works tools		600.00
Outside Apparatus:		
1—2" x 2¼" x 4" Davidson pump	$60.00	
1—7'6" x 36'0" Fairbanks scales (Installed 1890. Cap. 100 tons.)	950.00	
1—8'0" x 14'0" Standard Scales (Installed 1876. Cap. 2 tons.)	450.00	
1—Stiff leg derrick with winch (Installed 1890.)	180.00	
		1,640.00
Wells, Valve Manholes, Separators, etc.:		
Excavation—327.94 cu. yds. @ $1.25	$410.00	
Backfilling—17.39 cu. yds. @ 60¢	10.00	
Brickwork—55,536 @ $19.00	1,055.00	
Concrete—8.21 cu. yds. @ $10.00	82.00	
Forms @ $3.00	166.00	
C. I. Covers—15,951.92# @ 3½¢	558.00	
546		
W. I. Covers—427.08# @ 3½¢	$15.00	
Wooden Covers—237.30' B. M. @ $41.00	10.00	
I Beams—305.26# @ 6¢	19.00	
Scaffolding @ $1.00	56.00	
2—5' x 7' x 15' Separators	300.00	
1—4' x 16' x 6' "	150.00	
Excavation—106.69 cu. yds. @ $1.25	$133.00	
Backfilling—20.85 cu. yds. @ 60¢	13.00	
Brickwork—15,502 br. @ $19.00	295.00	
Scaffolding @ $1.00 per M	16.00	
Boxes—2,776' B. M. @ $41.00	114.00	
C. I. Covers—2,235.76# @ 3½¢	78.00	
Wood Covers—147' B. M. @ $41.00	6.00	
		$3,486.00

				Net construction cost.
Exhaust Steam Piping:				
21'3"—½"	@	$.13	$3.00	
160'6"—¾"	@	.15	24.00	
1,851'6"—1"	@	.18	333.00	
697'6"—1¼"	@	.24	168.00	
80'6"—1½	@	.30	24.00	
783'5"—2"	@	.39	306.00	
3'3"—2½"	@	.63	2.00	
116'0"—3"	@	.83	96.00	
27'3"—3½"	@	1.04	28.00	
52'9"—8"	@	1.19	63.00	
60'3"—6"	@	2.05	124.00	
67'9"—8"	@	3.60	244.00	
Valves:				
3—¾"	@	$.88	$3.00	
4—1"	@	1.25	5.00	
23—1¼"	@	1.75	40.00	
2—1½"	@	2.50	5.00	
11—2"	@	3.75	41.00	
4—4"	@	8.00	32.00	
1—8"	@	18.00	18.00	
Radiators:				
2—14 Section	@	$5.00	$10.00	
Covering:				
21'3"—½"	@	$.11	$3.00	
84'6"—¾"	@	.12	10.00	
25'6"—1"	@	.14	4.00	

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				Net construction cost.
417'6"—1¼"	@	$.15	$63.00	
36'6"—1½"	@	.17	6.00	
751'5"—2"	@	.18	135.00	
3'3"—2½"	@	.20	1.00	
116'0"—3"	@	.23	27.00	
27'0"—3½"	@	.25	7.00	
52'9"—4"	@	.30	16.00	
70'3"—6"	@	.40	28.00	
67'9"—8"	@	.55	37.00	
Exhaust heads:				
2—8" Connections	@	$54.00	$108.00	
1—1¼" Connections	@	12.00	24.00	

				Net construction cost.
Steam traps:				
2—1½"	@	$36.00	$72.00	
2—¾"	@	15.00	30.00	
1—2"			54.00	
Separators:				
1—2"			$17.00	
2—3"	@	$25.00	50.00	
				$2,261.00
Steam Piping:				
Excavation—362'6"	@	$.20	$73.00	
Pipe:				
60'3"—⅜"	@	$.13	8.00	
90'0"—½"	@	.13	12.00	
410'9"—¾"	@	.15	64.00	
1,687'3"—1"	@	.18	304.00	
333'3"—1¼	@	.24	80.00	
79'3"—1½"	@	.30	24.00	
475'4"—2"	@	.39	186.00	
8'0"—2½"	@	.63	5.00	
292'0"—3"	@	.83	242.00	
185'6"—4"	@	1.19	221.00	
21'6"—6"	@	2.05	45.00	
136'5"—8"	@	3.60	493.00	

548

Covering:				
60'3"—⅜"	@	$.11	$7.00	
90'0"—½"	@	.11	10.00	
410'9"—¾"	@	.12	49.00	
1,430'3"—1"	@	.14	200.00	
333'3"—1¼	@	.15	50.00	
79'3"—1½	@	.17	14.00	
475'4"—2"	@	.18	86.00	
8'0"—2½"	@	.20	2.00	
292'0"—3"	@	.23	67.00	
185'6"—4"	@	.30	56.00	
21'6"—6"	@	.40	9.00	
136'3"—8"	@	.55	75.00	
Valves:				
4—⅜"	@	$.63	$3.00	
5—½"	@	.65	3.00	
19—¾"	@	.88	17.00	
48—1"	@	1.25	60.00	
14—1¼"	@	1.75	25.00	

				Net construction cost.
5—1½"	@	2.50	13.00	
29—2"	@	3.75	109.00	
1—2½"	@	7.00	7.00	
13—3"	@	10.00	130.00	
3—4"	@	25.00	75.00	
2—6"	@	60.00	120.00	
5—8"	@	75.00	375.00	
Hose:				
115'66"—½"	@	$.75	$87.00	
In Building # 50:				
Pipe:				
112'—¾"	@	$.15	$17.00	
1,332'—1"	@	.18	240.00	
541'—1¼"	@	.24	130.00	
144'—1½"	@	.30	43.00	
173'—2"	@	.39	67.00	
Valves:				
1—¾"	@	$1.88	$1.00	
12—1"	@	1.25	15.00	
3—1¼"	@	1.75	5.00	
2—1½"	@	2.50	5.00	
2—2"	@	3.75	8.00	
549				
Excavation—331' @ 40¢			$66.00	
Covering—331' @ 15¢			50.00	
Boxing—276' B. M. $41.00			11.00	
				$4,064.00
Circulation Piping:				
Excavation—358' @ 40¢			$143.00	
W. I. Pipe:				
1'6"—1½"	@	$.30	1.00	
99'9"—2"	@	.39	39.00	
55'6"—3"	@	.83	47.00	
324'2"—4"	@	1.19	387.00	
105'0"—6"	@	2.05	215.00	
Tile—84'0"—6"	@	.74	62.00	
W. I.—23'0"—8"	@	3.60	83.00	
Valves:				
4—2"	@	$3.75	$15.00	
7—4"	@	25.00	175.00	
2—6"	@	60.00	120.00	
				1,287.00

				Net construction cost.
Oil Piping:				
Excavation—812′	@	40¢	$325.00	
W. I. Pipe:				
37′—⅜″	@	$.13	5.00	
351′—1″	@	.18	63.00	
67′—1½″	@	.30	20.00	
91′—2″	@	.39	36.00	
374′—3″	@	.83	310.00	
1,041′—4″	@	1.19	1,239.00	
8′—6″	@	2.05	17.00	
C. I. Pipe:				
765′—8″ @ 4½¢ per lb.			$1,480.00	
Valves:				
9—1″	@	$1.25	$11.00	
2—1½″	@	2.50	5.00	
2—2″	@	3.75	8.00	
16—3″	@	10.00	160.00	
12—4″	@	25.00	300.00	
Boxing—168′ B. M.	@	$41.00	$7.00	
Strainers—2	@	$4.00	8.00	
Hand pumps—2	@	3.00	6.00	
				4,200.00
550				
Water piping:				
Excavation—1,469′	@	$.40	$588.00	
W. I. Pipe:				
11′0″—¼″	@	.12	1.00	
18′0″—⅜″	@	.13	2.00	
492′0″—½″	@	.13	64.00	
306′0″—¾″	@	.15	46.00	
609′0″—1″	@	.18	110.00	
294′0″—1¼″	@	.24	71.00	
317′0″—1½″	@	.30	95.00	
1,637′0″—2″	@	.39	638.00	
103′0″—2½″	@	.63	65.00	
176′0″—3″	@	.83	146.00	
429′0″—4″	@	1.19	511.00	
207′0″—6″	@	1.59	329.00	
4′0″—6″	@	2.05	8.00	
Valves:				
3—¼″	@	.63	$2.00	
8—½″	@	.63	4.00	
14—¾″	@	.88	12.00	

				Net construction cost.
13—1"	@	1.25	16.00	
13—1¼"	@	1.75	23.00	
7—1½"	@	2.50	18.00	
57—2"	@	3.75	218.00	
8—3"	@	10.00	80.00	
7—4"	@	25.00	175.00	
2—5"	@	35.00	70.00	
1—6"	@	60.00	60.00	
C. I. Pipe:				
24'0"—4" @ 4½¢ per lb.			$22.00	
20'0"—6" @ 4½¢ per lb.			28.00	
Specials:				
1—4" Tee—5¢ per lb.			5.00	
1—4" Valve			18.00	
1—6" Tee—5¢ per lb.			7.00	
1—6" Valve			26.00	
In Building # 50.				
W. I. Pipe:				
113'—½" @ $.13			15.00	
75'—¾" @ .13			11.00	
Valves:				
9—½" @ .63			6.00	
2—¾" @ .88			2.00	
				$3,492.00
551				
Gas Piping:				
996'—⅜"	@	$.12	$120.00	
442'—½"	@	.13	57.00	
161'—¾"	@	.15	24.00	
722'—1"	@	.18	130.00	
104'—1¼"	@	.24	25.00	
62'—1½"	@	.30	19.00	
13'—2"	@	.39	5.00	
In building # 50:				
196'—⅜"	@	.12	$24.00	
171'—½"	@	.13	22.00	
182'—¾"	@	.15	27.00	
271'—1"	@	.18	49.00	
3'—1¼"	@	.24	1.00	
30'—1½"	@	.30	9.00	
61'—2"	@	.39	24.00	
				$536.00

				Net construction cost.
Electric Wiring:				
# 10 Copper wire—2,299′	@	$.05.....	$115.00	
½″ Conduit—906′6″	@	.05.....	46.00	
Lamps—49—16 C. P.	@	.20.....	10.00	
Junction boxes—40	@	.20.....	8.00	
Perkins switches—6	@	.25.....	2.00	
S. T. Switches—7	@	.75.....	5.00	
Fuse plugs—9	@	.05.....	1.00	
Cut-outs—7	@	.25.....	2.00	
				189.00
Sewer piping:				
Tile—659′—6″	@	.74.....	$488.00	
805′—8″	@	.88.....	708.00	
70′—12″	@	1.25.....	88.00	
W. I. Pipe—36′—2″	@	.39.....	14.00	
90′—10″	@	4.00.....	360.00	
C. I. Soil P. 109′—4″@4½¢ per lb			92.00	
Excavation 1,779′	@	.60.....	1,067.00	
				2,817.00
552				
Drain piping:				
Excavation—386′	@	$.40.....	$154.00	
W. I. Pipes:				
36′0″—½	@	.13.....	5.00	
38′1″—¾″	@	.15.....	6.00	
197′3″—1″	@	.18.....	36.00	
293′3″—1¼″	@	.24.....	70.00	
73′0″—1½″	@	.30.....	22.00	
416′3″—2″	@	.39.....	162.00	
55′6″—3″	@	.83.....	46.00	
Tile:				
13′0″—3″	@	.60.....	8.00	
45′0″—4″	@	.63.....	28.00	
Valves:				
7—½″	@	.63.....	4.00	
4—¾″	@	.88.....	4.00	
10—1″	@	1.25.....	13.00	
6—1¼″	@	1.75.....	11.00	
1—1½″	@	2.50.....	3.00	
				$572.00
Tar piping:				
Excavation—431′	@	$ .40.....	$172.00	
W. I. Pipe:				
12′0″—1½	@	.30.....	4.00	
232′0″—2″	@	.39.....	90.00	
16′0″—2½″	@	.63.....	10.00	
461′0″—3″	@	.83.....	383.00	
26′0″—4″	@	1.19.....	31.00	

				Net construction cost.
Valves:				
1—2″	@	3.75	8.00	
1—3″	@	10.00	30.00	
1—4″	@	25.00	25.00	
Plug cocks:				
2—2″	@	2.50	5.00	
1—3″	@	3.50	4.00	
				782.00
553				
Gas Mains in Works Yard:				
C. I. Pipe:				
20′0″—8″	@	4½¢ per lb		$38.00
101′0″—10″	@	4½¢ " "		254.00
37′0″—14″	@	4½¢ " "		150.00
1,183′6″—16″	@	4½¢ " "		5,768.00
368′0″—20″	@	4½¢ " "		2,484.00
754′6″—24″	@	4½¢ " "		6,933.00
Drips:				
7—16″	@	5¢ per lb		687.00
2—20″	@	5¢ " "		230.00
3—24″	@	5¢ " "		360.00
Valves:				
1—8″	@	$27.00		27.00
1—14″	@	55.00		55.00
12—16″	@	67.00		304.00
4—20″	@	96.00		384.00
2—24″	@	120.00		240.00
Reducers:				
4—20″ x 16″ @ 5¢ per lb				95.00
2—24″ x 16″ @ 5¢ per lb				76.00
3—16″ x 10″ @ 5¢ per lb				54.00
1—24″ x 20″ @ 5¢ per lb				32.00
Crosses:				
2—16″ @ 5¢ per lb				85.00
1—20″ @ 5¢ " "				61.00
1—24″ @ 5¢ " "				84.00
Tees:				
1—10″ @ 5¢ per lb				17.00
13—16″ @ 5¢ " "				442.00
5—20″ @ 5¢ " "				248.00
11—24″ @ 5¢ " "				745.00
1—14″ @ 5¢ " "				34.00

554

		Net construction cost.
Quarter Bends:		
2—8" @ 5¢ per lb	$12.00	
1—10" @ 5¢ per lb	8.00	
12—16" @ 5¢ per lb	220.00	
8—24" @ 5¢ per lb	440.00	
Solid sleeves:		
2—16" @ 5¢ per lb	24.00	
1—24" @ 5¢ per lb	24.00	
Plugs:		
1—16" @ 5¢ per lb	4.00	
1—20" @ 5¢ per lb	6.00	
5—24" @ 5¢ per lb	46.00	
Flanges:		
6—24" @ 5¢ per lb	4.00	
Cap. 1—24" @ 5¢ per lb	8.00	
		$21,183.00
Paving:		
Brick on edge on concrete—329 sq. yds. @ $2.60	$855.00	
Brick flat on concrete—269 sq. yds. @ $2.40.	646.00	
Wood block on concrete—105 sq. yds. @ $3.00	315.00	
Brick flat on dirt—2,800 sq. ft. @ $.13	364.00	
Cement sidewalk 1,267 sq. ft. @ $.14	177.00	
Curbing:		
Excavation—21 cu. yds. @ $.80	17.00	
Concrete—21 cu. yds. @ 8.10	170.00	
Forms @ $2.00	42.00	
		2,586.00

555

Fencing and Gates:

344'4"
1,223'10"
89'0"
28'0"
16'8"
16'0"
24'0"
77'0"

1,818'10" @ $1.25 per foot $2,274.00

		Net construction cost.
On leased property:		
439′0″		
10′0″		
10′6″		
16′0″		
475′6″ @ $1.25 per foot	395.00	
		$2,869.00
Rubbish kiln		10.00
Oil unloading device:		
Excavation—3.33 cu. yds. @ $1.20	4.00	
Backfilling 3.33 cu. yds. @ .60	2.00	
Poles and landing—1,025′ @ 41.00	42.00	
Pipe—80′—1¼″ @ .24	19.00	
Chain—160′ @ .35	56.00	
Weights and ladders—279# @ .04	11.00	
		$134.00
Lumber in yard—2,563′ B. M.—Y. Pine @ 26.00		67.00
Fixtures, etc., in building # 50:		
Fixtures	80.00	
Meter dipping outfit	120.00	
" provers—2 @ $160.00	320.00	
		520.00
Relief holder (# 18):		
Two lift—175,000 cu. ft. holder in brick tank—16″ and 20″ connections. Erected 1862.		
Excavation—110′ diam. x 21′ = 7,392 cu. yds. @ $1.00	$7,392.00	
556		
Floor—10,821′ B. M. @ $41.00	$444.00	
Crown support—7,697′ B. M. @ $41.00	316.00	
Concrete floor and footing—838 sq. yds. @ $1.80	1,508.00	
3 Course brick floor—487 sq. yds @ $3.00	1,461.00	
Walls, pilasters and footings 388,800 brick @ $17.00	6,610.00	
Scaffolding @ $1.00	389.00	
Holder = 80′x 80′x 4 2% x 5″ = 130,560# @ $.05	6,528.00	
Guide frame, ladder and connections = 80% @ $.05	5,222.00	
		29,870.00

		Net construction cost.
Storage Holder (# 19):		
Two lift 309,432 cu. ft. holder in brick tank, 16″ connections. Erected 1891.		
Excavation—120′ diam. x 24′ = 10,054 cu. yds. @ $1.10	$11,058.00	
Sheathing—20,376′ B. M. @ $40.00 net	815.00	
Floor—16,342′ B. M. @ $41.00	670.00	
Crown support—13,880′ B. M. @ $41.00	569.00	
Concrete floor and footing—1,245 sq. yds. @ $1.80	2,241.00	
3 Course brick floor—944 sq. yds. @ $3.00	2,832.00	
Walls, pilasters and footings—508,500 brick @ $17.00	8,645.00	
Scaffolding @ $100 per M	509.00	
Holder 100′ x 100′ x 4 2% x 5″ = 204,000# @ $.05	10,200.00	
Guide frame, ladder and connections 80% @ $.05	8,160.00	
		45,699.00
Storage Holder (# 20):		
Three lift, 1,132,000 cu. ft. holder in steel tank, surrounded by brick wall. Connections 20″. Erected 1903.		
Excavation—139′ diam. x 18′ = 6,413 cu. yds. @ $1.00	$6,413.00	
557		
Sheathing—23,598′ B. M. @ $40.00—net	$944.00	
Concrete floor and footing 1,108 cu. yds. @ $8.10	8,975.00	
Walls, pilasters and footing 442,050 brick @ $17.00	7,515.00	
Scaffolding @ $1.00 per M	442.00	
Holder and tank complete 1,132 M @ $79.00	89,428.00	
		$113,717.00
Oil Tank (# 21):		
Capacity—100,000 gals. Erected 1902.		
Excavation—1,045 cu. yds. @ $1.30	$1,359.00	
Backfilling—107 cu. yds. @ $.60	64.00	
Foundations—97 cu. yds. concrete @ $8.10	786.00	
Walls—84,480 brick @ $19.00	1,605.00	
Scaffolding @ $1.00 per M	85.00	
Cement coping—44 cu. ft. @ $1.00	44.00	

		Net construction cost.
Steel tank:		
Bottom = 796 sq. ft.		
Sides = 2,332 " "		
Top = 796 " "		
3,924 sq. ft. x 10.2# @ $.05.....	2,001.00	
		5,944.00
Oil Tank (# 22):		
Capacity—64,000 gals. Erected 1897.		
Excavation—546 cu. yds. @ $1.30.....	$710.00	
Backfilling—61 cu. yds. @ $.60.....	37.00	
Foundations—61 cu. yds. concrete @ $8.10..	49.00	
Walls—30,600 brick @ $19.00.....	581.00	
Scaffolding @ $1.00 per M.....	31.00	
Cement coping—38 cu. ft. @ $1.00.....	38.00	
Steel tank:		
Bottom = 677 sq. ft.		
Sides = 1,403 " "		
Top = 677 " "		
2,757 " " x 10.2# @ $.05...	1,406.00	
		2,852.00
558		
Oil Tank (# 23):		
Capacity 16,000 gals. Erected 1891.		
Excavation—185 cu. yds. @ $1.40.....	$259.00	
Foundations—14 cu. yds. concrete @ $8.10..	113.00	
Walls—22,493 brick @ $19.00.....	427.00	
Scaffolding @ $1.00 per M.....	23.00	
Steel tank:		
Bottom = 235		
Sides = 571		
Top = 235		
Pan = 140		
1,181 sq. ft. x 10.2# @ 5¢.....	602.00	
		$1,424.00
Oil Tanks (# 24 & # 25):		
Capacity 300,000 gals. each. Erected '07 and '10.		
Excavation—1,194 cu. yds. @ $1.00.....	$1,194.00	
Concrete bottom and *fottings* 128 cu. yds. @ $8.10	1,037.00	
Walls—111,585 brick @ $19.00.....	2,120.00	
Scaffolding @ $1.00 per M.....	112.00	

		Net construction cost.
Steel tank:		
Bottom = 1,750		
Sides = 4,310		
Top = 1,750		
7,810 sq. ft. x 10.2# @ 5¢....	3,984.00	
Two tanks @	$8,447.00	$16,894.00
Holder Oil Tank (# 36):		
Capacity 700 gals. Erected 1893.		
Framing—219′ B. M. @ $60.00.....	$13.00	
Steel tank—1,712# @ 5¢.....	86.00	
		$99.00
Holder Oil Tank (# 58):		
Capacity 9,500 gals. Erected 1904.		
Base—171′ B. M. @ $60.00.....	$10.00	
Steel tank—7,954# @ 5¢.....	398.00	
		$408.00
559		
Pipe coating tank (# 60):		
Erected 1900.		
Excavation—1.48 cu. yds. @ $1.00.....	$2.00	
Backfilling—1.37 cu. yds. @ $.50.....	1.00	
Framing—1,373′ B. M. @ $41.00.....	56.00	
		$59.00

EXHIBIT I.

Distribution System.

Street Mains.

Size.	Length in feet.	Kind of pavement.	Net construction cost of pipe laid in unpaved streets.	Net construction cost of tearing up and replacing pavement.	Total net construction cost.
2½" & under	25,527′	None	$5,373.00	.....	$5,373.00
	1,835	Brick on Concrete	386.00	$1,290.00	1,676.00
	3,200	Brick on Sand	674.00	1,552.00	2,226.00
	2,915	Asphalt on Concrete	614.00	1,692.00	2,306.00
	320	Wood Block on concrete	67.00	15.00	82.00
	150	Macadam	32.00	20.00	52.00
	33,947		$7,146.00	$4,569.00	$11,715.00
3" W. I.	4,266′	None	$1,326.00	.....	$1,326.00
	17,205	Brick on Concrete	5,347.00	$13,819.00	19,166.00
	8,960	Brick on Sand	2,785.00	4,345.00	7,130.00
	2,680	Asphalt on Concrete	833.00	1,555.00	2,388.00
	1,990	Wood Block on Concrete	618.00	95.00	713.00
	200	Macadam	62.00	26.00	68.00
	35,301		$10,971.00	$19,840.00	$30,811.00
4" C. I.	350,664′	None	$195,074.00	.....	$195,074.00
	68,083	Brick on Concrete	37,875.00	$47,876.00	85,751.00
	64,370	Brick on Sand	35,809.00	31,213.00	67,022.00

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Size.	Length in feet.	Kind of pavement.	Net construction cost of pipe laid in unpaved street.	Net construction cost of tearing up and replacing pavement.	Total net construction cost.
	82,757	Asphalt on Concrete	46,038.00	48,024.00	94,062.00
	5,020	Wood Block on Concrete	2,793.00	5,258.00	8,051.00
	2,830	Macadam	1,574.00	374.00	1,948.00
	573,724		$319,163.00	$132,745.00	$451,908.00
6″ C. I.	75,719′	None	$57,569.00	.....	$57,569.00
	32,365	Brick on Concrete	24,607.00	$22,759.00	47,366.00
	29,355	Brick on Sand	22,319.00	14,234.00	36,553.00
	21,215	Asphalt on Concrete	16,130.00	12,311.00	28,441.00
	3,350	Wood Block on Concrete	2,547.00	3,509.00	6,056.00
	162,004		$123,172.00	$52,813.00	$175,985.00
8″ C. I.	20,494′	None	$20,969.00	.....	$20,969.00
	15,680	Brick on Concrete	16,044.00	$11,738.00	27,782.00
	9,280	Brick on Sand	9,495.00	4,790.00	14,285.00
	18,070	Asphalt on Concrete	18,489.00	11,442.00	29,931.00
	1,410	Wood Block on Concrete	1,443.00	1,572.00	3,015.00
	673	River Crossing	5,290.00	.....	5,290.00
	65,607		$71,730.00	$29,542.00	$101,272.00

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Street Mains (Cont'd).

10″ C. I.	9,196′	None	$12,211.00	.....	$12,211.00
	7,122	Brick on Concrete	9,477.00	$5,654.00	15,131.00
	11,600	Brick on Sand	15,436.00	6,350.00	21,786.00
	3,250	Asphalt on Concrete	4,324.00	2,229.00	6,553.00
	320	Wood Block on Concrete	426.00	378.00	804.00
	540	Concrete	719.00	188.00	907.00
	32,008		$42,593.00	$14,799.00	$57,392.00
12″ C. I.	19,492′	None	$32,614.00	.....	$32,614.00
	5,837	Brick on Concrete	9,768.00	$4,640.00	14,408.00
	1,120	Brick on Sand	1,874.00	613.00	2,487.00
	3,615	Asphalt on Concrete	6,050.00	2,480.00	8,530.00
	1,285	Wood Block on Concrete	2,150.00	1,520.00	3,670.00
	31,349		$52,456.00	$9,253.00	$61,709.00
14″ C. I.	622′	None	$1,267.00	$.....	$1,267.00
16″ C. I.	13,956′	None	$33,867.00	.....	$33,867.00
	3,690	Brick on Concrete	8,955.00	$3,265.00	12,220.00
	2,840	Brick on Sand	6,892.00	1,732.00	8,624.00
	5,370	Asphalt on Concrete	13,031.00	4,250.00	17,281.00
	1,350	Concrete	3,276.00	544.00	3,820.00
	1,300	River Crossing	22,790.00	.....	22,790.00
	28,506		$88,811.00	$9,791.00	$98,602.00

Number services.		Kind of pavement.	Net construction cost of pipe laid in unpaved street.	Net construction cost of tearing up and replacing pavement.	Total net construction cost.
20″ C. I.	2,236′	None	$7,378.00	.....	$7,378.00
	1,040	Brick on Concrete	3,432.00	$967.00	4,399.00
	1,290	Brick on Sand	4,257.00	827.00	5,084.00
	710	Asphalt on Concrete	2,343.00	599.00	2,942.00
	760	Wood Block on Concrete	2,508.00	1,053.00	3,651.00
	6,036		$19,918.00	$3,446.00	$23,364.00
24″ C. I.	580′	None	$2,576.00	.....	$2,576.00
	400	Brick on Concrete	1,777.00	$445.00	2,222.00
	200	Wood Block on Concrete	888.00	331.00	1,219.00
	639	River Crossing	10,294.00	.....	10,294.00
	1,819		$15,535.00	$776.00	$16,311.00
Grand Total	970,923′		$752,762.00	$277,574.00	$1,030,336.00

563

Street Mains (Cont'd).

House Services.

6,744	None	$94,011.00	.....	$94,011.00
3,757	Brick on Concrete	52,373.00	$17,883.00	70,256.00
2,986	Brick on Sand	41,625.00	9,794.00	51,419.00
3,304	Asphalt on Concrete	46,058.00	18,304.00	64,362.00
309	Wood Block on Concrete	4,307.00	2,194.00	6,501.00

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62	Macadam	864.00	78.00	942.00
8	Concrete	112.00	23.00	135.00
17,170		$239,350.00	$48,276.00	$287,626.00

Lamp Post Services.

Services	1,140	$6,555.00	$4,708.00	$11,263.00
Risers	1,140	1,368.00	.....	1,368.00
Posts	1,140	12,312.00	.....	12,312.00
		$20,235.00	$4,708.00	$24,943.00

564 *Distribution System.*

Line Pot Drips.

Number.	Size.	Net construction cost.
17	3″	$136.00
107	4″	1,284.00
30	6″	570.00
7	8″	56.00
5	10″	50.00
9	12″	108.00
11	16″	176.00
1	20″	20.00
187		$2,400.00

Valves.

5	3″	$50.00
63	4″	1,039.50
30	6″	594.00
8	8″	237.60
8	10″	316.80
3	12″	148.50
10	16″	737.00
3	24″	396.00
130		$3,519.40

Steam R. R. Crossings.

191	@ $20.00	$3,820.00

Street R. R. Crossings.

277	Single track @ $15.00	$3,405.00
109	Double " @ 20.00	2,180.00
		$5,585.00

Tools.

Bicycles, Tool Carts, Ditch pumps, etc	$1,000.00
Main and Service Tools	2,000.00
Fitters and Meter Repair Tools	2,000.00
	$5,000.00

565

Meters in Use.

Size and kind.		Number in use.	Net construction cost.
3	Lt. Ord.	915	$5,883.45
5	"	7,289	55,980.00
10	"	1,008	10,684.80
20	"	106	1,592.12
30	"	72	1,587.60
45	"	18	561.78
60	"	9	367.74
80	"	1	53.74
100	"	3	187.65
150	"	1	92.29
200	"	1	120.83
5	" P. P.	10,201	97,521.56
10	" "	227	2,832.96
10	" "A"	46	487.60
30	" "	4	88.20
60	" "	1	40.86
2,000	" C. I.	1	1,250.00
		19,903	$179,333.00

Meters in Stock.

3	Lt. Ord.	178	$1,055.54
5	"	237	1,670.85
10	"	166	1,635.10
20	"	14	196.28
30	"	4	83.80
45	"	8	240.08
60	"	3	118.68
5	" P. P.	196	1,750.28
10	" "	39	457.47
10	" "A"	6	59.10
30	" "	2	41.90
		853	$7,309.08

(Above prices include cost of meter, freight, connections, test and incidentals as per schedule.)

EXHIBIT J.

Assumed Construction of Distribution System.

Mains in District # 1.

(To be Laid During 1912.)

Size.	Kind of paving.	Length of mains.	Net construction cost.	15% of N.C. cost.	N.C. cost plus engrg., etc.
2½"	Asphalt on concrete	750′	$593.00		
3"	" " "	2,250	2,005.00		
4"	" " "	13,408	15,240.00		
6"	" " "	6,940	9,303.00		
8"	" " "	3,860	6,394.00		
10"	" " "	1,750	3,529.00		
12"	" " "	2,550	6,016.00		
16"	" " "	3,370	10,845.00		
20"	" " "	710	2,942.00		
		35,588′	$56,867.00	$8,530.00	$65,397.00
2½"	Wood Blk. on concrete	320′	$83.00		
3"	" " " "	1,990	713.00		
4"	" " " "	5,020	8,051.00		
6"	" " " "	2,450	4,429.00		
8"	" " " "	1,410	3,015.00		
12"	" " " "	1,285	3,670.00		
20"	" " " "	760	3,561.00		
24"	" " " "	200	1,220.00		
		13,435′	$24,742.00	$3,711.00	$28,453.00

CHARTS

TOO

LARGE

FOR

FILMING

2½"	Brick on Concrete		1,015′	$927.00		
3"	" " "		17,190	1,915.00		
4"	" " "		34,710	43,717.00		
6"	" " "		21,905	32,058.00		
8"	" " "		6,650	11,782.00		
10"	" " "		2,642	5,614.00		
12"	" " "		2,167	5,346.00		
16"	" " "		3,690	12,219.00		
20"	" " "		1,040	4,399.00		
24"	" " "		400	2,221.00		
			91,409′	$120,198.00	$18,030.00	$138,228.00
2½"	Brick on Sand		2,250′	$1,565.00		
3"	" " "		7,620	6,063.00		
4"	" " "		27,445	28,576.00		
6"	" " "		16,315	20,315.00		
10"	" " "		3,630	6,817.00		
16"	" " "		2,840	8,624.00		
20"	" " "		1,290	5,084.00		
			61,390′	$77,044.00	$11,557.00	$88,601.00

571 Mains in District # 1 (Cont'd).

2½"	Macadam		150′	$51.00		
3"	"		200′	89.00		
			350′	$140.00	$21.00	$161.00

Size.	Kind of paving.	Length of mains.	Net construction cost.	15% of N.C. cost.	N.C. cost plus engrg. etc.
2½"	None	11,350′	$2,389.00		
3"	"	1,705	530.00		
4"	"	30,975	17,231.00		
6"	"	6,450	4,904.00		
8"	"	5,670	5,802.00		
10"	"	3,310	4,405.00		
12"	"	928	1,553.00		
14"	"	400	815.00		
16"	"	6,640	16,113.00		
20"	"	2,110	6,963.00		
24"	"	500	2,576.00		
		70,118′	$63,281.00	$9,492.00	$72,773.00
8"	River Crossing	673′	$5,290.00		
16"	" "	1,300	22,790.00		
24"	" "	639	10,294.00		
		2,612′	$38,374.00	$5,756.00	$44,130.00

572

Mains in District # 2.

(To be Laid During 1913.)

2½"	Asphalt	1,915′	$1,514.00		
3"	"	430	383.00		
4"	"	46,287	52,610.00		
6"	"	5,335	7,152.00		

8″	"	.....	4,680	7,752.00		
10″	"	.....	500	1,008.00		
12″	"	.....	105	248.00		
			59,252′	$70,667.00	$10,600.00	$81,267.00
2½″	Brick on concrete	.....	240′	$219.00		
3″	" " "	.....	15	17.00		
4″	" " "	.....	31,793	40,043.00		
6″	" " "	.....	6,620	9,688.00		
8″	" " "	.....	9,030	15,999.00		
10″	" " "	.....	4,480	9,518.00		
12″	" " "	.....	3,670	9,055.00		
			55,848′	$84,539.00	$12,681.00	$97,220.00
10″	Wood Block	.....	320′	$814.00		
4″	Macadam	.....	850	585.00		
10″	Concrete	.....	540	907.00		
16″	"	.....	1,350	3,820.00		
			3,060′	$6,126.00	$919.00	$7,045.00
2½″	Brick on sand	.....	950′	$661.00		
3″	" " "	.....	1,340	1,066.00		
4″	" " "	.....	34,475	38,895.00		
6″	" " "	.....	3,530	4,396.00		
8″	" " "	.....	5,100	7,851.00		

Size.	Kind of paving.	Length of mains.	Net construction cost.	15% of N.C. cost.	N.C. cost plus engrg., etc.
10″	" " "	7,970	14,968.00		
12″	" " "	1,050	2,332.00		
		54,415′	$67,169.00	$10,075.00	$77,244.00
2½″	None	7,357′	$1,549.00		
3″	"	2,065	642.00		
4″	"	94,810	52,743.00		
6″	"	14,055	10,686.00		
8″	"	1,350	1,381.00		
10″	"	1,830	2,435.00		
12″	"	13,950	23,343.00		
16″	"	7,720	18,734.00		
		143,137′	$111,513.00	$16,727.00	$128,240.00

573 Mains in District # 3.

(To be Laid During 1914.)

2½″	Asphalt	250′	$198.00		
4″	"	23,062	26,212.00		
6″	"	8,940	11,985.00		
8″	"	9,530	15,785.00		
10″	"	1,000	2,017.00		
12″	"	960	2,265.00		
		43,742′	$58,462.00	$8,769.00	$67,231.00

2½"	Brick on concrete	860′	$786.00		
4"	" " "	1,300	1,637.00		
6"	" " "	3,840	5,620.00		
		6,000′	$8,043.00	$1,206.00	$9,249.00
4"	Brick on sand	2,450′	$2,551.00		
6"	" " "	10,540	13,124.00		
8"	" " "	3,150	4,849.00		
12"	" " "	70	155.00		
		16,210′	$20,679.00	$3,102.00	$23,781.00
4"	Macadam	1,980′	$1,363.00		
6"	Wood Block	900	1,627.00		
		2,880′	$2,990.00	$449.00	$3,439.00
2½"	None	6,540′	$1,377.00		
3"	"	496	154.00		
4"	"	225,159	125,256.00		
6"	"	54,184	41,196.00		
8"	"	14,504	14,840.00		
10"	"	4,036	5,371.00		
12"	"	4,614	7,721.00		
14"	"	222	452.00		
16"	"	1,596	3,873.00		
20"	"	126	416.00		
		311,477′	$200,656.00	$30,098.00	$230,754.00

Total = 380,309′ = 72.01 Miles in District # 3.
All Districts—Grand Total 183.39 Miles without river mains
River mains = 2,612′.

District # 1.		
Asphalt on Concrete	$65,397.00	
Wood Block on Concrete	28,453.00	
Brick on Concrete	138,228.00	
Brick on Sand	88,601.00	
Macadam	161.00	
None	72,773.00	
River Crossing	44,130.00	
		$437,743.00
District # 2.		
Asphalt	$81,267.00	
Brick on Concrete	97,220.00	
Wood Block, Macadam & Concrete	7,045.00	
Brick on Sand	77,244.00	
None	128,240.00	
	$391,016.00	
Add for discrepancy due to re-scaling of maps as to paving on sub-dividing city in three districts	21,674.00	
		412,690.00
District # 3.		
Asphalt	$67,231.00	
Brick on Concrete	9,249.00	
Brick on Sand	23,781.00	
Macadam & Wood Block	3,439.00	
None	230,754.00	
		334,454.00
		$1,184,887.00

COPY BOUND

Services in District # 1.

(To be Laid in 1912.)

Number house services.	Number lamp services.	Kind of pavement.	Net construction cost.	15% of N.C. cost.	N. C. cost plus engrg., etc.
880	....	Asphalt on Concr.	$17,142.00		
....	34	" " "	744.00		
306	....	Wood blk. on Concr.	6,438.00		
2,245	....	Brick " "	41,982.00		
....	109	" " "	2,385.00		
1,483	....	" " Sand	25,537.00		
....	109	" " "	2,385.00		
1	....	Macadam	15.00		
1,292	....	None	17,980.00		
....	77	"	1,685.00		
6,207	329		$116,293.00	$17,444.00	$133,737.00

Services in District # 2.

(To be Laid in 1913.)

1,397	....	Asphalt on Concr.	$27,214.00		
....	135	" " "	2,954.00		
3	....	Wood blk. on Concr.	63.00		
1,258	....	Brick " "	10,945.00		
....	95	" " "	2,079.00		
985	....	" " Sand	16,962.00		
....	137	" " "	3,018.00		
24	....	Macadam	365.00		
....	2	"	64.00		
2	....	Cement	34.00		

Number house services.	Number lamp services.	Kind of pavement.	Net construction cost.	15% of N.C. cost.	N.C. cost plus engrg., etc.
....	6	"	131.00		
2,573	....	None	35,868.00		
....	159	"	3,479.00		
6,242	534		$103,176.00	$15,476.00	$118,652.00
576					

Services in District # 3.

(To be Laid in 1914.)

665	....	Asphalt on Concr	$12,954.00		
....	92	" " "	2,033.00		
44	....	Brick " "	823.00		
....	5	" " "	109.00		
250	....	Brick on Sand	4,305.00		
35	....	Macadam	532.00		
3,727	....	None	51,954.00		
....	180	"	3,933.00		
4,721	277		$76,648.00		
		Correction for discrepancy due to error in re-subdividing as to pavements	16,452.00		
			$93,100.00	$13,965.00	$107,065.00

Summary of Services.

District # 1	$133,737.00
" # 2	118,652.00
" # 3	107,065.00
	$359,454.00

COPY BOUND

Meters in District # 1.

(To be Installed in 1912.)

Number of meters.	Kind.	Net construction cost.	15% engrg. casualty liability, omissions & contingencies.	Net construction + 15% engineering, etc.
4,995	Ord.	$41,633.00		
4,506	P. P.	43,361.00		
9,501		$84,994.00	$12,749.00	$97,743.00

Meters in District # 2.

(To be Installed in 1913.)

2,990	Ord.	$24,920.00		
3,259	P. P.	31,361.00		
6,249		$56,281.00	$8,442.00	$64,723.00

Meters in District # 3.

(To be Installed in 1914.)

1,380	Ord.	$11,502.00		
2,773	P. P.	26,556.00		
4,153		$38,058.00	$5,709.00	$43,767.00
Meters in Stock		$7,309.00	$1,096.00	$8,405.00
		$45,367.00	$6,805.00	$52,172.00

CLOSE IN CENTER

Summary of Meters.

District # 1	$97,743.00
" # 2	64,723.00
" # 3	52,172.00
	$214,638.00

578 *Reproduction Expenditures.*

Organization & Legal Expense.

	1911.	1912.	1913.	1914.
Preliminary investigation	$3,000.00	.....	.....	.....
Legal expense	3,334.00	$3,333.00	$3,333.00	.....
Incorporation fee	4,000.00	.....	.....	.....
Salary of Manager	7,500.00	7,500.00	7,500.00	.....
Incidental & travelling expenses	1,500.00	1,500.00	1,500.00	.....
Clerical force	4,500.00	4,500.00	4,500.00	.....
Rent & stationery	1,500.00	1,500.00	1,500.00	.....
	25,334.00	18,333.00	18,333.00	.....
Taxes @ 2¼%	0	793.00	(½ yr.)636.00	.....
	25,334.00	19,126.00	18,969.00	.....
Loss of interest @ 6%	(½ yr.)760.00	2,139.00	(½ yr.)1,695.00	.....
	$26,094.00	$21,265.00	$20,664.00	.....

COPY BOUND

CLOSE IN CENTER

Real Estate.

N. C. Cost plus Engrg., etc.	$220,993.00	.....	.....	.....
Taxes @ 2¼%	(½ yr.) 2,486.00	$5,179.00	(½ yr.) $2,805.00	.....
	$223,479.00			
Loss of interest @ 6%	(½ yr.) 6,704.00	13,966.00	(½ yr.) 7,522.00	.....
	$230,183.00	$19,145.00	$10,327.00	.....

Buildings.

N. C. Cost plus Engrg., etc.	.....	$98,581.00	.....	.....
Taxes @ 2¼%	.....	(½ yr.) 1,109.00	(½ yr.) $1,155.00	.....
		99,690.00		
Loss of interest @ 6%	.....	(½ yr.) 2,991.00	(½ yr.) 3,098.00	.....
		$102,681.00	$4,253.00	.....

Works Equipment.

(N. C. Cost plus Engrg., etc.)	.....	.....	.....	.....
In Building # 1 A & B	.....	$25,919.00	.....	.....
" " # 3	.....	14,479.00	$14,479.00	.....
" " # 4	.....	28,415.00	.....	.....
" " # 5	.....	1,435.00	.....	.....
" " # 6	.....	8,941.00	8,942.00	.....
" " # 6 C	.....	.....	2,271.00	.....

	1911.	1912.	1913.	1914.
294,902′ Street mains in District # 1.....	$.....	$437,743.00	.....	.....
315,712′ " " " " # 2.....	.....	.....	$412,690.00	.....
380,309′ " " " " # 3.....	.....	.....	.....	$334,454.00
Miscellaneous Distribution Equipment.....	.....	13,373.00	.....	.....
" " "	.....	.....	5,000.00	.....
" " "	.....	.....	.....	5,000.00
		$682,596.00	$601,065.00	$498,691.00
Taxes @ 2¼%.....	.....	(½ yr.)7,679.00	22,759.00	(½ yr.)18,512.00
		$690,275.00	$623,824.00	$517,203.00
Loss of interest @ 6%.....	.....	(½ yr.)20,708.00	61,374.00	(½ yr.)49,643.00
		$710,983.00	$685,198.00	$566,846.00
Working Capital	$22,000.00	$40,000.00	$80,000.00	.....
Taxes @ 2¼%.....(½ yr.)	248.00	966.00	(½ yr.)1,198.00	.....
	$22,248.00	$40,966.00	$81,198.00	.....
Loss of interest @ 6%.....(½ yr.)	667.00	2,604.00	(½ yr.)3,213.00	.....
	$22,915.00	$43,570.00	$84,411.00	.....
Grand Total of above Expenditures..	$279,192.00	$1,168,792.00	$1,043,884.00	$566,846.00

(Here follow pasters, marked pages 581-593.)

CHARTS

TOO LARGE FOR FILMING

594 COMPLAINANT'S EXHIBIT # 21.

J. P. B.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

595 *Appraisal on the Basis of Cost of Reproduction New of the Property and Business of the Des Moines Gas Company, Des Moines, Iowa, as of January 1, 1911, Made for the Above-named Company by William A. Baehr, Consulting Engineer, Chicago.*

596 William A. Baehr, Consulting Engineer.

CHICAGO, ILL., *July* 1, 1911.

Des Moines Gas Company, Des Moines, Iowa.

GENTLEMEN: I beg to submit herewith a report covering an appraisal of the property and business of your company as of January 1, 1911, made on the basis of cost of reproduction new, with proper depreciation allowance. This report includes a careful estimate of going value as of same date.

Respectfully submitted,

(Signed) W. A. BAEHR.

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605 *Explanation.*

The Des Moines Gas Company furnished us an inventory of their physical property, including real estate buildings, apparatus piping, street mains, service meters, tools, etc. We checked this inventory sufficiently to satisfy us that it was correct.

Unit costs were fixed for each item to cover the cost of material and wages as of date of appraisal.

Business Development.

In order to develop the business in a logical way, and to enable us to proceed with the construction work in accordance with the probable actual sequence and with speed with which it would be best to carry it out, and, as the two are necessarily correlated, we have decided to divide the territory supplied by the Des Moines Gas Company into three districts as follows:

District Number 1, comprises in a general way the central portion of the city, and embraces the principal commercial and industrial sections, together with a portion of the central residence district.

District Number 2, comprises a residence district rather closely built up and contiguous to and surrounding district number 1.

District Number 3, comprises the outlying residence portions of the city.

These districts have been plotted on a map accompanying this report, from which the outlines of each may be determined.

606 The general development is based upon laying mains and supplying gas to districts number 1 first, then to district number 2, and subsequently district number 3.

It is logical to supply district number 1 first, because the gas plant is so situated that mains supply the other two districts must pass through district number 1, and, furthermore, district number 1, comprises that class of gas consumers who would quickly use gas, and also comprise the portion of the city, in which the greatest consumption of gas occurs. In other words, the greatest immediate revenue is secured in this district.

Subsequently it is logical to assume that mains would next be extended into district number 2 and lastly into number 3.

History and Rate of Construction of the Conceptual Plant.

It is assumed that some mind first conceives the idea of supplying the city of Des Moines with gas on January 1, 1911, which is the date of this valuation of the Des Moines Gas Company. The person conceiving this idea thereupon would logically proceed to conduct a preliminary investigation, and the sequence is assumed in a general way as follows:

A general preliminary investigation, which is assumed to terminate favorably to the scheme, would be followed by a preliminary

engineering investigation and report. Such a report is estimated to require not less than three months of time.

607 During the remainder of the first six months of 1911 the other logical proceedings would be as follows:

Taking steps to secure the franchise.

Arranging to finance the enterprise.

Optioning real estate.

Arranging for the services of a local attorney-at-law.

Outlining a business and engineering organization, and getting into touch with future officers and heads of departments.

It is assumed that these preliminary steps would consume six months at the very least, and it is estimated herein that the actual decision to proceed with the enterprise is reached on July 1, 1911.

During the last six months of 1911 we then estimated the logical sequence of events as follows:

Real Estate purchased July 1, 1911.

Business and engineering departments organized as rapidly as possible.

An office would be rented and equipped and the head men composing the organization would begin to arrive in Des Moines very shortly after July 1, 1911.

The legal and general financial organization is estimated to be completed during this time.

The engineering department would thereupon proceed to make final plans for the plant and distribution system as rapidly as possible, such work being estimated to require not less than three months for sufficient general features to be agreed upon, so that the work to be undertaken first could be determined. Thereupon, it is estimated that the engineering plans and designs would proceed

608 sufficiently rapidly to enable the work to be determined, ordered and completed as hereinafter assumed.

All contracts for the 1912 work are figured as closed not later than March 1, 1912.

On account of the necessity of utilizing the winter months for laying river pipes, it is estimated that all river pipes would be undertaken by November or December, 1911, and completed by March 1, 1912.

The rate of money expenditures are determined, and the features and portions of the work done in each period, are estimated as in the following tables. In order to avoid unnecessary complication it is estimated that the rate of expenditure of money follows a straight line from the beginning to the end of each year, and we estimate this is so nearly true that the final result will not be appreciably changed. For instance, the largest individual expenditure in 1911 is for real estate and this is estimated as purchased July 1, 1911.

It is estimated that gas is turned into the distribution system on January 1, 1913, and constantly thereafter supplied.

Interest is figured at the rate of 6% per year.

Taxes chargeable to capital account are figured on everything, and at 2¼% per year on full valuation. Rate during 1910 was 90. mills on $1.00 on 25% of full valuation.

609 *Items of Additional Cost.*

In addition to the cost of material and wages there are certain other items entering into the cost of this work. These are estimated as follows:

	Real estate. Per cent.	Plant. Per cent.	Mains and services. Per cent.	Meters in use. Per cent.	Meters in stock. Per cent.
1. Contingencies on Base only.	...	10.0	10.0	10.0	...
2. Engineering & Superintendence on Base and Number 1	1.5	5.0	5.0	5.0	...
3. Legal Organization, Liability for Casualty & Fire Insurance. On Base Only	4.0	4.0	4.0	4.0	4.0
4. Taxes during Construction. On Base & Nos. 1, 2 and 3	Figures at 2¼% on full valuation. See explanation on following page.				
5. Interest During Construction. On Base Nos. 1, 2, 3, & 4	Figured at 6% on full valuation. See explanation on following page.				
6. Working Capital	Estimated at $150,000.				
7. Going Value	Figured as hereinafter shown.				

610 *Explanation of Tax and Interest Items.*

Taxes chargeable to capital account during construction period are figured at 2¼% on full valuation, including base and Nos. 1, 2, & 3.

In the Going Value calculation, after the various parts have gone into operation, taxes are computed by dividing same into three classes as follows:

The property tax figured at 2¼% on valuation.

The gross revenue tax of 2%.

The federal corporation net revenue tax.

Inasmuch as taxes are levied one year and paid in the next, and since we estimate same as accruing during the current year, we do not figure interest on the amount of the taxes chargeable to capital account during the current year. Interest on the amount of taxes for prior years however, is so included.

See further explanation hereinafter.

611 *Explanation of Items of Additional Cost.*

Contingencies.

All these items of cost which are unforeseen and can not be estimated.

Omissions.—These are less serious in this case on account of the completeness of the inventory and also because the plant is seen in its completed state, but nevertheless, some allowance for this item is necessary.

Temporary Work. More or less of this is inevitable, and after completion of plant it disappears.

Piece Meal Construction. Very high for certain portion of plant lower in other.

Changes in construction made necessary by encountering unforeseen obstacles during progress of work.

Rise in prices of materials or labor above normal.

Financial panics.

Inclement weather causing delays.

Floods causing both an actual property loss and unavoidable delays.

Failure of Contractors.

Especial unforeseen difficulties encountered in deep excavations.

Strikes.

In general, all costs which experience has shown must be provided for by prudent men engaging in large constructive enterprises over and above those which can be specifically enumerated.

Engineering and Superintendence.

Salaries and expenses of engineering and superintending force.

Preparation of Detailed Plans.

Preparation of Specifications.

612 Receiving all bids.

Preparation for letting of contracts.

Inspection of Work.

Purchase of material and supervision of labor where work is not contracted.

Adjustments of contracts.

Final tests to determine if work fulfills specifications.

Placing of the plant in successful operation.

Investigation of suitable real estate, determination of proper location of plant, investigation of suitability of soil, access to transportation facilities, flood conditions, etc.

Investigation Expenses. Includes preliminary inspection and investigation of territory, also business investigation and negotiations.

Legal and Organization Liability for Casualty and Fire Insurance.

Preliminary engineering, surveys, estimates and reports.

Traveling and other preliminary expenses prior to the actual decision to proceed with the enterprise.

Optioning real estate.
Organization fees.
Legitimate expenditures for acquiring franchise.
Legal expenses during construction period, making and certifying abstracts, not including legal work in connection with preparation of contracts, which latter item is included with, "Engineering and Superintendence."
Administrative expenses, such as salaries of executive officers, office assistants, accounting expenses, rent and office expenses.
Liability for casualty, estimated to cover both employees and public liability, sub-contractors insurance, also general contractors and owners contingent insurance.
Fire Insurance.

613 *Estimate of "Legal and Organization" Item.*

Investigation Expense	$2,500
Preliminary engineering surveys, estimates and reports	17,500
Traveling and other preliminary expenses	1,000
Optioning real estate—approximately ¼ of 1%, say	500
State Incorporation fees ($25.00—1st 10. M plus $1 for each add. M.	5,015
Acquisition of franchise	5,000
Legal Expenses, 3-year retainer	10,000
Stockholders meetings, 2 per year for two years @ $50.00.	200
Directors Meetings, 1 meeting per month, 9 directors and $10.00 fee each, for 2 years (thereafter to "operation").	2,100
Salary President, General Manager @ $7,500 per year.. 2 years	15,000
Salary Secretary @ $2,400	4,800
Salary 6 office men av. $1,000 per year each—2 years	12,000
Office Rent @ $150 per month—2 years	3,600
Janitor and Cleaning Force @ $75.00 per month—2 years.	1,800
Heating and Lighting Office @ $50.00—2 years	1,200
Telephone Service @ $1,000 per year—2 years	2,000
Stationery and sundry supplies—2 years	5,000
Total	89,215
Add for Liability for casualty 1% of $2,256,093	22,561
Add for Fire Insurance @ $2,500 per year	5,000
Grand Total	116,776

(Required 4% of $2,256,093 = $90,244.)

614 Taxes During Construction.

In order to avoid unnecessary complication it is estimated that the rate of expenditure of money follows a straight line from the beginning to the end of each year, and the details confirmed this estimate.

A careful estimate was also made of that portion of the investment which would go into operation during each year, and taxes were not charged to construction after that time on each portion.

The actual rate of taxation of the "Des Moines Gas Company" in 1910 was 2.25% on assessed valuation.

During any current year the taxes were figured at full rate for the complete expenditure for the year, but only for one-half the year. For preceding years they were computed for the entire year.

Interest During Construction.

Assuming a uniform rate of expenditure from beginning to end of each year, interest on the yearly investment is figured on the full valuation at one-half the yearly rate for the first year, and thereafter at the full rate.

Interest is charged to construction up to the time the various portions of the investment are placed in operation, and not thereafter.

Interest is charged at the rate of 6% per year and is compounded annually during the construction period.

Working Capital.

The amount allowed under this heading is figured to include the following items:

Materials and Supplies in Stock.

Cash in sufficient amount to insure the discounting of bills,
615 the purchasing of supplies economically and in large quantities, the tiding over of money stringencies, the ability to care for large repairs on short notice, and the making of extensions to the plant which can usually be more cheaply constructed where there are liberal quick assets available for such purpose.

In addition to these items there should be sufficient cash available to cover gas delivered and not paid for.

The actual working capital of the Des Moines Gas Company as of Dec. 31, 1910, was as follows:

Materials and Supplies	$77,410.00
Accounts Receivable	53,627.46
Cash	49,434.15
Advance Accounts	905.20
Total	181,377.27
Less Accounts Payable	39,607.29
Net	141,769.98

We estimate a fair allowance for this item as follows:

Materials and Supplies	75,000.00
Gas delivered and not paid for, labor only	32,600.00
Cash approx. 10% yearly, gross income	52,400.00
Total	150.000.00

616 Going Value.

"Going Value," or "Going Concern Value," may be defined as the enhancement in the value of the physical property of any concern, due to the business that concern has and is doing. It has also been called the value of a created income.

Going value has been held to include various items at different times by different engineers, among which the following may be enumerated.

Cost of Developing the Business. Under this head may be enumerated.

Advertising.

Solicitation of business.

Gratuitous work, such as free piping, free appliances, selling appliances at cost or less than a fair profit.

Demonstrating old and new devices for utilizing gas.

Educating the public to the advantages of gas, and gas plant products.

Experimental work.

Trial installations of gas consuming devices.

Money and effort spent on prospective business that does not develop.

Loss of interest on cost of extensions into what is at first unprofitable territory, but where such extensions are made perhaps on account of paving, or perhaps for their advertising value.

Cost of development of an organization for the effective handling of business development.

Excess of operating expenses above income during a portion of development period.

Deficit in fair return on the investment during the de-
617 velopment period.

In addition to the foregoing still other features have been enumerated by various engineers. These may be grouped under Other Going Value Items.

Management. It is imperative that high managerial ability and efficiency should be recognized and allowance for same made. Manifestly such a policy, in the last analysis, is in the interest of the consumer.

The possession of real estate of sufficient area and so located as to rapidly care for extensions for some years is an asset of value. Such possessions frequently avoid the necessity of rebuilding a new plant, or of abandoning an older one.

Another feature or item of going value is based on the fact that where connections are made to a consumer's house and business relations established, it requires a special incentive to induce such a consumer to change to a competing company.

The state of preservation of the plant, and the fact that it is rendering good service.

Several Methods of Figuring Going Value.

One method is to base going value on the annual revenue from the sale of gas. This is probably on the theory that the least possi-

ble development period to reproduce the business of any gas company is two years, and assuming a straight line development during such a period, a purchaser would probably reason he would lose one-half of two years' revenue, or in other words, one year's annual income from the sale of gas, if he should elect to build a new plant in the place of buying an existing one. This method in the case
618 of the Des Moines Gas Company as of the date of this valuation, would result in a figure of about $540,000.

Another method is to estimate the going value on the basis of $30.00 per consumer, which figure is estimated to be the average cost per consumer of equipping him with gas consuming appliances and securing his business in a given length of time. Curiously, also, this figure is practically equal to the average annual revenue per consumer. This method of figuring usually contemplates a rapid development period, and in the case of the Des Moines Gas Company results in a figure of $597,090 as of date of this valuation.

Cost of Development Method.

The method we prefer to use, however, and which seems to us to be based on sound logic and which lends itself to accurate calculation is explained as follows:

In the first place, "Going Value" is the enhancement in the value of the physical property based upon the business the concern has acquired and the revenue it enjoys. No argument is required to demonstrate that it costs money to acquire this business, whether as an independent outlay, or in part by stockholders foregoing returns on the investment.

It is not unusual to measure this "Cost of Developing the Business" by the losses incurred during the period of development. In this instance, we measure this item by the losses incurred by the Des Moines Gas Company in developing its business to its present stage and revenue.

619 We also wish to call attention to the fact that "Going Value" may, and probably does vary in amount and from time to time in a private enterprise, but in a regulated public service corporation, this item, once determined on the basis of "Cost of Developing the Business," remains fixed, or practically so. This is because price regulation means adjustment of rates to a point where the return is a practically constant percentage on the investment, and future additions to that investment are figured to earn that constant return,—no more, no less. This is a vital distinction between the "Going Value" of a private and a public service enterprise.

It may be of considerable assistance when analyzing "Cost of Developing the Business" to consider the position of an investor about to purchase an existing company. In estimating the value of the physical property no great difficulties should arise, but when it comes to the foregoing item he would probably secure the clearest ideas on the subject by considering there are two companies situated in exactly similar communities, alike in every particular as to physical property and environment but differing only in the matter of the business connected and developed. One company is the actual going Des Moines Gas Company with its business developed as of date of this valuation, and in receipt of a substantial revenue, and the other

company has only the exact duplicate of the physical property of the first company, "the bare bones of the plant," but without one iota of business.

620 Now, what will it cost to develop the business of the conceptual plant to exactly equal that of the actual going Des Moines Gas Company? The answer to this question is figured in our calculation as herein, and we feel the foregoing view point will serve to greatly simplify the principles that control this question.

621 *Summary of Reproduction New and Present or Depreciated Values.*

Classification.	Cost of reproduction new.	Cond. %	Present or depreciated value.
Real Estate	$229,229.00	100.	$229,229
Plant Buildings	86,924.00	84.8	73,741
Contents of Buildings	190,880.00	86.2	164,450
Outside Apparatus Holders, Tanks and Sundry Equipment	325,871.00	94.2	306,940
Gen'l Office & Stable Equipment	45,549.00	88.0	40,087
Distribution System	1,993,243.00	87.7	1,746,924
Working Capital	150,000.00	....	150,000
Going Value	509,795.00	....	509,795
	3,531,491.00	....	3,221,166

Average Condition Per Cent of Physical Property including Real Estate = 89.2%.

Average Condition Per Cent of Physical Property excluding Real Estate = 88.2%.

622 *Reproduction New Value of the Physical Property and Business.*

Classification.	Base figures.	Items of additional cost.	Total.
Real Estate	$200,000	$29,229	$229,229
Plant Buildings	67,607	19,317	86,924
Contents of Buildings	148,461	42,419	190,880
Outside Apparatus, etc	253,449	72,422	325,871
Mains	1,047,530	299,293	1,346,823
Services	292,020	83,433	375,453
Meters in Use	199,024	56,861	255,885
Meters in Stock	7,448	974	8,422
Distribution Tools	5,180	1,480	6,660
Gen'l Office & Stable Equipment	35,374	10,175	45,549
Working Capital	.....	.....	150,000
Going Value—Cost of Developing the Business	.....	.....	509,795
	2,256,093	615,603	3,531,491

623 *Analysis of Items of Additional Cost Reproduction New Value.*

Classification.	Base.	Items 1, 2 and 3. %	Amount.	Taxes.	Interest.	Total.
Real Estate	$200,000	5.5	$11,000	$4,954	$13,275	$29,229
Plant Buildings	67,607	19.5	13,183	1,668	4,466	19,317
Contents of Buildings	148,461	19.5	28,951	3,659	9,809	42,419
Outside Apparatus, etc	253,449	19.5	49,422	6,251	16,749	72,422
Mains	1,047,530	19.5	204,269	25,827	69,197	299,293
Services	292,020	19.5	56,944	7,199	19,290	83,433
Meters in Use	199,024	19.5	38,810	4,905	13,146	56,861
Meters in Stock	7,448	4.0	298	184	492	974
Distribution Tools	35,180	19.5	1,010	128	342	1,480
Gen'l Office & Stable Equipment	35,374	19.5	6,898	891	2,386	10,175
	2,256,093	....	410,785	55,666	149,152	615,603

624 *Schedule Showing the Portion of Investment in Operation During Each Year.*

	1913.	1914.
Items 1, 2 and 3	1/3 of Total.	2/3 of Total.
Real Estate	1/3 " "	2/3 " "
Gas Plant	1/2 of 1912 Portion.	3/4 " "
Mains, Services and Paving	Total in District # 1.	Total in District # 1 and # 2.
Meters in Use	Total of 1912 Portion.	Total of 1912 and 1913 Portions.
Meters in Stock	.....	.....
Distribution Tools	1/2 of Total.	3/4 of Total.
St. Main Valves and Drips and R. R. Crossings	Total in District # 1.	Total in District # 1 and # 2.
General Office, Stables and Records	1/2 of 1912 Portion.	3/4 of Total.

NOTE.—Gas first turned on Jan. 1, 1913.
Entire physical equipment in operation on and after Jan. 1, 1915.

625 *The Portion of Investment in Operation During Each Year Not Including Taxes and Interest. Reproduction New Value.*

	1913.	1914.
Items 1, 2 and 3	$136,928	$273,857
Base Figures:		
Real Estate	66,667	133,333
Gas Plant	157,353	352,138
Mains	271,533	509,715
Paving Over Mains	123,089	226,646
House Services	87,270	175,033
Lamp Services	5,106	13,394
Paving Over Services	16,316	29,238
Meters in Use	56,004	130,753
Meters in Stock	.....	.....
Distribution Tools, R. R. Crossings, Street Main Valves and Drips	6,912	12,008
General Office, Stable and Records	2,839	26,530
Total	930,017	1,882,645

626 *Summary of Estimated Expenditures by Years Reproduction New Value.*

	1911.	1912.	1913.	1914.
Items 1, 2 and 3	$70,000	$147,560	$118,252	$74,973
Base Figures:				
Real Estate	200,000	.....	.....	.....
Gas Plant	.....	314,707	154,810	.....
Mains Including River Pipes	.....	271,533	238,182	252,699
Paving Over Mains	.....	123,089	103,557	46,307
House Services	.....	87,270	87,763	66,377
Lamp Services	.....	5,106	8,288	4,299
Paving Over Services	.....	16,316	12,922	3,679
Meters in Use	.....	56,004	74,749	68,271
Meters in Stock	.....	.....	.....	7,448
Distribution Tools R. R. Crossings, Street Main Valves and Drips	.....	9,502	3,801	4,040
General Office, Stable and Record	.....	5,679	29,695	.....
Total	270,000	1,036,766	832,019	528,093
Taxes at 2¼% for ½ current period	3,037	11,664	9,360	5,941
Taxes for prior expenditure	.....	6,326	10,215	9,123
Interest at 6% for ½ current period	3,100	31,292	25,207	16,116
Interest for prior expenditure	.....	16,868	27,242	24,327
Total	281,137	1,102,916	904,043	583,600

NOTE.—Interest and taxes are cumulative. See table of Items of

627 *Detail of Method of Figuring Taxes and Interest Portion Charged to Capital Account Only Reproduction New Value.*

$3,037 = 1⅛% of $270,000.
8,100 = 3% of $270,000.
11,664 = 1⅛% of $1,036,766
6,326 = 2¼% of $281,137.
31,292 = 3% of $1,036,766 + $6,326.
16,868 = 6% of $281,137.
9,360 = 1⅛% of $832,019.
10,215 = 2¼% of $281,137 + $1,036,766 — $930,017. Portion in Operation in 1913.
25,207 = 3% of $832,019 + $10,215.
27,242 = 6% of $281,137 + $1,102,916 — $930,017.
5,941 = 1⅛% of $528,093.
9,123 = 2¼% of $281,137 + $1,102,916 + $904,043 — $1,882,645 Portion in Operation in 1914.
16,116 = 3% of $528,093 + $9,123.
24,327 = 6% of ($281,138 + $1,102,916 + $904,043 — $1,882,645).

628 *Computation of Taxes and Interest Shown as Divided Between Capital Account and Operating Expense Reproduction New Value.*

	1911.	1912.	1913.	1914.
Taxes:				
To Capital Account.....	$3,037	$17,990	$19,575	$15,064
To Operating Expense.....	.....	.....	20,925	42,359
Total.....	3,037	17,990	40,500	57,423
Interest:				
To Capital Account.....	8,100	48,160	52,440	40,443
To Operating Expense.....	.....	.....	55,801	112,959
Total.....	8,100	48,160	108,250	153,402

629 *Detail of Method of Figuring Taxes and Interest Portion Charged to Operating Expense Only Reproduction New Value.*

$20,925 = 2¼% of $30,017.
$930,017 = Portion in Operation During 1913.
$24,359 = 2¼% of $1,882,645.
$1,882,645 = Portion in Operation During 1914.
$55,801 = 6% of $930,017.
$112,959 = 6% of $1,882,645.

630 *Estimated Expenditures during the Year* 1911, *not Including Taxes and Interest.*

Item.	1911 Expenditures.
General preliminary investigation, preliminary engineering investigation, securing franchise, investigating and optioning real estate, attorney's fees, and other preliminary work during the first 6 months	$30,000
Real Estate purchased July 1, 1911	200,000
Completing legal, general financial, and engineering organizations, final plans of plant and distribution system, arranging to construct river pipes, renting and equipping office, and other general work of the second six months	40,000
Total	270,000

Explanation of Above.

	First Six months.	Last Six months.
Preliminary Investigation and Engineering	$20,000	.....
Incorporation Fee	.....	$5,015
Making and Certifying Abstracts	.....	250
Investigating (Eng) and Optioning Real Estate	5,500	.....
Securing Franchise	2,830	2,170
Attorney's Fee	1,670	1,665
Stockholders' and Directors' Meetings	.....	1,200
Salary President and General Manager	.....	3,750
" Secretary	.....	1,200
" Clerks	.....	3,000
Office Rent	.....	900
Forward	30,000	19,150

631		First Six months.	Last Six months.
	Forward	30,000	19,150
	Janitor, Light, Telephone, and Sundries	.....	1,500
	Stationery Supplies, Traveling Expense, etc	.....	2,000
	Engineering Department, approx. $40,000 per year	.....	17,350
	Total	30,000	40,000

632 *Estimated Expenditures at Gas Plant—Base Figures Only—Reproduction New Value.*

No work during 1911.

	1912.	1913.
2 small holders (Pits completed by May 1st)	$75,800	.....
All buildings erected	67,607	.....
2-6-foot and 2-8'-6" water gas sets completed by November 1st	36,665	.....
2 Condensers	4,600	.....
3 Boilers complete, F. W. Heater, 1 Pump and Injector	6,770	.....
2 No. 7 Roots Exhausters	3,750	.....
2 Oil Tanks No. 21-22	9,098	.....
1 Tar Tank	1,469	.....
Purifiers	21,024	.....
2 Small Station Meters	5,700	.....
Foundation No. 4 Holder	20,270	.....
2 Connelly Automatic Governors	2,625	.....
Foundation for Exhausters and Meters	1,390	.....
75% of Sundry equipment, yard connections, piping sewers, grading, paving, etc	57,939	.....
1-10'-6" Water Gas Set	.....	$18,680
1 Boiler and Injector, stack and foundation	.....	2,142
1 Large Exhauster	.....	2,055
2 Positive Rotary "Pusher" Units	.....	3,400
1-14' Station Meter	.....	8,996
Forward	314,707	35,273

	1912.	1913.
633 Forward	$314,707	$35,273
2 Oil Tanks No. 24-25	.....	15,174
No. 4 Holder, not including foundation, but including brick wall	.....	85,050
25% of Sundry Equipment, etc	.....	19,313
Total	314,707	154,810

634 *Estimated Expenditures, General Office—Base Figures Only—Reproduction New Value.*

	1912.	1913.
Office Furniture and Fixtures	.....	$14,015
Records not including engineering data, which is estimated under "Engineering and Superintendence"	.....	10,000
Stable Equipment	$5,679	5,680
Total	5,679	29,695

635 *Estimated Expenditures, Main and Cost Due to Cutting & Replacing Paving Over Same, District No. 1—Base Figures Only—Reproduction New Value.*

		1912.
Mains:		
2-16" River Pipes		$23,000
1-24" " "		10,000
1-8" " "		5,500
15,825 feet 2½" Street Mains		5,539
30,955 " 3" " "		12,382
111,558 " 4" " "		61,357
54,060 " 6" " "		42,167
17,590 " 8" " "		18,118
11,332 " 10" " "		15,072
6,930 " 12" " "		11,642
400 " 14" " "		840
16,540 " 16" " "		40,689
5,910 " 20" " "		19,858
1,180 " 24" " "		5,369
Total.. 272,290		271,533

Paving Over Mains:

Sq. yards.	Kind of paving.	Replacement cost.
9,875.2	Asphalt	$31,942
17,971.8	Brick on Sand	21,086
4,236.0	Wood Block	9,405
58.3	Macadam	57
26,584.7	Brick on Concrete	60,599
58,726.0		123,089

636 *Estimated Expenditures, Mains and Cost Due to Cutting and Replacing Paving Over Same, District No. 2—Base Figures Only—Reproduction New Value.*

	1913.
Mains:	
10,462 feet 2½" Street Mains	$3,662
3,850 " 3" " "	1,540
208,215 " 4" " "	114,519
29,540 " 6" " "	23,041
20,160 " 8" " "	20,765
15,640 " 10" " "	20,801
18,775 " 12" " "	31,542
9,070 " 16" " "	22,312
Total.. 315,712 "	$238,182

Paving Over Mains:

Sq. yards.	Kind of paving.	
14,548.2	Asphalt	$47,049
118.5	Wood Block	267
16,117.1	Brick on Concrete	36,662
15,783.5	" " Sand	18,484
157.4	Macadam	152
565.0	Concrete (Cement)	943
Total.. 47,289.7		103,557

637 *Estimated Expenditures, Mains and Cost Due to Cutting and Replacing Over Same, District No. 3—Base Figures Only—Reproduction New Value.*

		1914.
Mains:		
7,650	feet 2½" Street Mains	$2,677
496	" 3" " "	198
253,951	" 4" " "	139,674
78,404	" 6" " "	61,155
27,184	" 8" " "	28,000
5,036	" 10" " "	6,698
5,644	" 12" " "	9,482
222	" 14" " "	466
1,596	" 16" " "	3,926
126	" 20" " "	423
Total.. 330,309		252,699

Paving Over Mains:

Square yds.	Kind of paving.	
11,243.7	Asphalt	36,325
266.6	Wood Block	596
1,666.7	Brick on Concrete	3,737
4,507.9	" " Sand	5,294
366.7	Macadam	355
Total.. 18,051.6		46,307

638 *Estimated Expenditures, House Services and Cost Due to Cutting and Replacing Paving Over Same, District No. 1—Base Figures Only—Reproduction New Value.*

		1912.
Services:		
6,207	House Services	$87,270
329	Lamp "	5,106
Total.. 6,536		**92,376**

Paving Over Services:

Square yds.	Kind of paving.	Replacement cost.
1,240.5	Asphalt	4,053
499.0	Wood Block	1,116
3,598.0	Brick on Concrete	8,234
2,465.8	" " Sand	2,912
0.9	Macadam	1
7,804.2		16,316

639 *Estimated Expenditures, House Services and Cost Due to Cutting and Replacing Paving Over Same, District No. 2—Base Figures Only—Reproduction New Value.*

		1913.
Services:		
6,242	House Services	$87,763
534	" "	8,288
Total.. 6,776		96,051

Paving Over Services:

Square yds.	Kind of paving.	Replacement cost.
1,872.3	Asphalt	6,127
5.0	Wood Block	11
2,067.0	Brick on Concrete	4,728
1,713.9	" " Sand	2,019
23.9	Macadam	24
7.3	Cement	13
Total.. 5,689.4		12,922

640 *Estimated Expenditures, House Services and Cost Due to Cutting and Replacing Paving Over Same, District No. 3—Base Figures Only—Reproduction New Value.*

		1914.
Services:		
4,721	House Services	$66,377
277	Lamp "	4,299
Total.... 4,998		70,676

Paving Over Services:

Square yds.	Kind of paving.	
925.2	Asphalt	3,024
75.0	Brick on Concrete	171
332.3	" " Sand	452
32.2	Macadam	32
Total.. 1,414.7		3,679

641 *Estimated Expenditures, Meters in Use, District No. 1—Base Figures Only—Reproduction New Value.*

	1912.	1913.
Regular Meters	$24,850	$16,567
Prepayment Meters	31,154	20,770
Total	56,004	37,337

642 *Estimated Expenditures, Meters in Use, District No. 2—Base Figures Only—Reproduction New Value.*

	1913.	1914.
Regular Meters	$14,919	$9,946
Prepayment Meters	22,493	14,995
Total	37,412	24,941

643 *Estimated Expenditures, Meters in Use, District No. 3—Base Figures Only—Reproduction New Value.*

	1914.
Regular Meters	$11,423
Prepayment Meters	31,907
Total	43,330

644 *Estimated Expenditures, Miscellaneous Distribution Equipment—Base Figures Only—Reproduction New Value.*

	1912.	1913.	1914.
Meters in Stock	.....	.....	$4,448
Distribution Tools	$5,180	.....	.....
Street Main Valves and Drips	1,820	$1,600	1,700
Steam and Street R. R. Crossings	2,502	2,201	2,340
Total	9,502	3,801	11,488

645 *Number of Feet of Each Size of Street Mains by Districts.*

Size.	District No. 1. Feet.	District No. 2. Feet.	District No. 3. Feet.	Total feet.
2½"	15,835	10,462	7,650	33,947
3"	30,955	3,850	496	35,301
4"	111,558	208,215	253,951	573,724
6"	54,060	29,540	78,404	162,004
8"	17,590	20,160	27,184	64,934
10"	11,332	15,640	5,036	32,008
12"	6,930	18,775	5,644	31,349
14"	400	.....	222	622
16"	16,540	9,070	1,596	27,206
20"	5,910	.....	126	6,036
24"	1,180	.....	.....	1,180
Total	272,290	315,712	380,309	968,311

646 *Number of Feet of Each Size of Main under Each Kind of Pavement and in Unimproved Streets by Districts.*

District No. 1.

Size of main.	Paving.	Lineal feet.
2½"	Asphalt	750
3"	"	2,250
4"	"	13,408
6"	"	6,940
8"	"	3,860
10"	"	1,750
12"	"	2,550
16"	"	3,370
20"	"	710
Total		35,588
2½"	Wood Block	320
3"	" "	1,990
4"	" "	5,020
6"	" "	2,450
8"	" "	1,410
12"	" "	1,285
20"	" "	760
24"	" "	200
Total		13,435
2½"	Brick Concrete Base	1,015
3"	" " "	17,190
4"	" " "	34,710
6"	" " "	21,905
8"	" " "	6,650
10"	" " "	2,642
12"	" " "	2,167
16"	" " "	3,690
20"	" " "	1,040
24"	" " "	400
Total		91,409
2½"	Brick Sand Base	2,250
3"	" " "	7,620
4"	" " "	27,445
6"	" " "	16,315
10"	" " "	3,630
16"	" " "	2,840
20"	" " "	1,290
Total		61,390

647

Size of main.	Paving.	Lineal feet.
2½"	Macadam	150
3"	"	200
	Total	350
2½"	No Paving	11,350
3"	" "	1,705
4"	" "	30,975
6"	" "	6,450
8"	" "	5,670
10"	" "	3,310
12"	" "	928
14"	" "	400
16"	" "	6,640
20"	" "	2,110
24"	" "	580
	Total	70,118
	Total	272,290 feet = 51.58 miles

648 *Number of Feet of Each Size of Main under Each Kind of Pavement and in Unimproved Streets by Districts.*

District No. 2.

Size of main.	Paving.	Lineal feet.
2½"	Asphalt	1,915
3"	"	430
4"	"	46,287
6"	"	5,335
8"	"	4,680
10"	"	500
12"	"	105
	Total	59,252
2½"	Brick Concrete Base	240
3"	" " "	15
4"	" " "	31,793
6"	" " "	6,620
8"	" " "	9,030
10"	" " "	4,480
12"	" " "	3,670
	Total	55,848
10"	Wood Block	320
4"	Macadam	850
10"	Concrete (cement)	540
16"	" "	1,350
	Total	1,890

2½"	Brick Sand Base	950
3"	" " "	1,340
4"	" " "	34,475
6"	" " "	3,530
8"	" " "	5,100
10"	" " "	7,970
12"	" " "	1,050
	Total	54,415

2½"	No Paving	7,357
3"	" "	2,065
4"	" "	94,810
6"	" "	14,055
8"	" "	1,350
	Total	119,637

649

Size of main.	Paving.	Lineal feet.
	Forward	119,637
10"	No Paving	1,830
12"	" "	13,950
16"	" "	7,720
	Total	143,137

Total..... 315,712 feet = 59.80 miles

650 *Number of Feet of Each Size of Main under Each Kind of Pavement and in Unimproved Streets by Districts.*

District No. 3.

Size of main.	Paving.	Lineal feet.
2½"	Asphalt	250
4"	"	23,062
6"	"	8,940
8"	"	9,530
10"	"	1,000
12"	"	960
	Total	43,742

2½"	Brick Concrete Base	860
4"	" " "	1,300
6"	" " "	3,840
	Total	6,000

		2,450
4″	Brick Sand Base	10,540
6″	" " "	3,150
8″	" " "	70
12″	" " "	
		16,210
Total		
		1,980
4″	Macadam	900
6″	Wood Block	6,540
2½″	No Paving	496
3″	" "	225,159
4″	" "	54,184
6″	" "	14,504
8″	" "	4,036
10″	" "	4,614
12″	" "	222
14″	" "	1,596
16″	" "	126
20″	" "	
		311,477
Total		

Total	380,309 Ft. = 72.01 miles.
Grand Total	183.39 Miles except river mains.
River Mains	2,612 ft.

651 *Square Yards of Various Pavements Over Mains by Districts.*

Kind of paving.	District No. 1.	District No. 2.	District No. 3.	Total.
Asphalt	9,875.2	14,548.2	11,243.7	35,667.1
Wood Block	4,236.0	118.5	266.6	4,621.1
Brick on Concrete	26,584.7	16,117.1	1,666.7	44,368.5
Brick on Sand	17,971.8	15,783.5	4,507.9	38,263.2
Macadam	58.3	157.4	366.7	582.4
Concrete (cement)	.....	565.0	.....	565.0

Lineal Feet of Pavement Cuts Over Mains by Districts.

Kind of paving.	District No. 1.	District No. 2.	District No. 3.	Total.
Asphalt	35,588	59,252	43,742	138,582
Wood Block	13,435	320	900	14,655
Brick on Concrete	91,409	55,848	6,000	153,257
Brick on Sand	61,390	54,415	16,210	132,015
Macadam	350	850	1,980	3,180
Concrete (cement)	.....	1,890	.....	1,890

652 *Number of Services under Each Kind of Pavement and in Unimproved Streets by Districts.*

District.	Kind of paving.	Number. House.	Lamp.	Total.
1	Asphalt	981	34	1,015
	Wood Block	306	0	306
	Brick, Concrete Base	2,246	109	2,355
	Brick, Sand Base	1,505	109	1,614
	Macadam	1	0	1
	No Paving	1,168	77	1,245
	Total	6,207	329	6,536
2	Asphalt	1,397	135	1,532
	Wood Block	3	0	3
	Brick, Concrete Base	1,258	95	1,353
	Brick, Sand Base	985	137	1,122
	Macadam	24	2	26
	Cement	2	6	8
	No Paving	2,573	159	2,732
	Total	6,242	534	6,776
3	Asphalt	665	92	757
	Brick, Concrete Base	44	5	49
	Brick, Sand Base	250	0	250
	Macadam	35	0	35
	No Paving	3,727	180	3,907
	Total	4,721	277	4,998
	Grand Total	17,170	1,140	18,310

653 *Statement of Meters in Use in Each District.*

Counted from Route Books of March 1, 1911, and adjusted to December 31, 1910, by records of meters set and removed.

District.	Standard meters.	Prepayment meters.	Total.
1	4,986	4,515	9,501
2	2,990	3,259	6,249
3	1,380	2,773	4,153
Total	9,356	10,547	19,903

Determination of Composite Life—Value on Reproduction New Basis.

Classification.	Reproduction New value.	Life.	Times renewed in 45.5 yrs.	Total expenditures in 45.5 yrs.	Total dollar years.
Plant Buildings	$86,924	45.5	1.0	86,924	3,955,042
Contents of Buildings	190,880	30.7	1.482	282,884	8,684,539
Outside Apparatus	.....	....	.....	.....	.....
Holders, Tanks and Sundry Equipment	325,871	44.6	1.021	332,714	14,839,044
Gen'l Office & Stable Equipment	45,549	28.6	1.591	72,468	2,072,585
Distribution System	1,993,243	37.4	1.218	2,427,770	90,798,598
Total	2,642,467	....	.....	3,202,760	120,349,808

$$\text{Composite Life} = \frac{120,349,808}{3,202,760} = 37.6 \text{ Yrs.}$$

655 *General Summary.*

Determination of Composite Age—Reproduction New Value.

Classification.	Value.	Age.	Age dollars.
Plant Buildings	$86,924	18.23	$1,584,625
Contents of Buildings	190,880	7.83	1,494,590
Outside Apparatus, Holders, Tanks, etc.	325,871	11.5	3,747,517
Gen'l Office & Stable Equipment	45,549	4.26	194,039
Distribution System	1,993,243	8.6	17,141,890
Total	2,642,467	.....	24,162,661

$$\text{Composite Age} = \frac{24,162,661}{2,642,467} = 9.14 \text{ Yrs.}$$

656 *Summary of Contents of Buildings, Condition Per Cent, Reproduction New and Present or Depreciated Values.*

Classification.	Cost of reproduction new.	Cond. %	Present or depreciated values.
Building # 1-A & B	$27,032	91.5	$24,736
" # 3	32,483	89.5	29,019
" # 4	30,157	42.0	12,655
" # 5	1,398	80.0	1,118
" # 6-A & B	19,475	91.5	17,816
" # 6-C	2,755	97.1	2,673
" # 7	58,693	99.0	58,002
" # 8-A & B	2,154	85.6	1,847
" # 10	1,287	96.7	1,245
" # 12	1,581	96.7	1,531
" # 13	373	95.0	354
" # 14	11,565	100.0	11,565
" # 16	1,928	98.0	1,889
Total	190,881	86.2	164,450

Summary of Outside Apparatus.

Holders	232,875	95.0	221,437
Tar, Oil and Pipe Coating Tanks	33,993	98.7	33,519
Outside Apparatus	2,552	63.3	1,614
Sundry Equipment	56,451	89.2	50,370
Total	325,871	94.2	306,940

Classification.	Material.	Value.	Life.	Times renewed in 50 yrs.	Total expenditures in 50 yrs.	Total dollar years.
# 1—A & B Purifying House	Brick	$12,217	50	1	$12,217	$610,850
# 1—C Fire Brick Shed	Corrugated Iron	117	30	1⅔	195	5,850
# 3—Meter, Gov. Exhauster and Wash Rooms	Brick	9,950	50	1	9,950	497,500
# 4—A-B-C Retort, Gen. and Blow House	Brick	6,482	50	1	6,482	324,100
# 5—A & B Coal Shed, Scrubber and condenser Rooms	Brick	2,665	50	1	2,665	133,250
# 6—A & B Boiler & Engine Rooms	Brick & Steel	8,435	50	1	8,435	421,750
# 6—C Boiler House Extension	Brick & Steel	1,432	50	1	1,432	71,600
# 7—Generator House	Brick & Steel	17,900	50	1	17,900	895,000
# 8—Coal Shed	Frame	8,823	30	1⅔	14,705	441,150
# 8—Coal Runway	Frame	417	30	1⅔	695	20,850
#10—Smith Carpenter Shop Store Room	Brick & Wood	10,325	50	1	10,325	516,250
#11—Bbl. Oil Store House	Reinforced Concrete	309	50	1	309	15,450
#12—Pump House	Brick, Steel & Concrete	998	50	1	998	49,900
#13—Oil Pump House	Brick	270	50	1	270	13,500
#14—Meter House	Brick, Steel & Concrete	1,944	50	1	1,944	97,200
#15—Stable	Frame	2,487	30	1⅔	4,145	124,350
#16—Boiler House	Steel & Galv. Iron	983	50	1	983	49,150
#17—Fire Brick Storage House	Frame	138	30	1⅔	230	6,900
#35—Fire Hose House	Frame	47	30	1⅔	78	2,340
#53—Coke Sued	Frame	758	30	1⅔	1,263	37,890
#54—Coke Rack	Frame	105	30	1⅔	175	5,250
#55—Oil Bbl. Store House	Frame	122	30	1⅔	203	6,090
Total		86,924	..	..	95,599	4,346,170

$$\text{Composite Life} = \frac{4,346,170}{95,599} = 45.5 \text{ Yrs.}$$

658 *Determination of Composite Age of Plant Buildings—Value on Reproduction Basis.*

Classification.	Age.	Value.	Age dollars.
# 1—A & B Purifying House	18	$12,217	$219,906
# 1—C Fire Brick Shed	1	117	117
# 3—Meter Gov. Exhauster & Wash Rooms	34	9,950	338,300
# 4—A. B. & C. Retort Gas & Blower House	34	6,482	220,388
# 5—A & B Coal Shed, Scrubber & Condenser Rooms	34	2,665	90,610
# 6—A & B Boiler & Engine Rooms	8	8,435	67,480
# 6—C Boiler House Extension	1	1,432	1,432
# 7—Generator House	5	17,900	89,500
# 8—A Coal Shed	14	8,823	123,522
# 8—B Coal Runway	9	417	3,753
#10—Smith, Carpenter Shop & Store Room	34	10,325	351,050
#11—Barrel Oil Store House	1	309	309
#12—Pump House	1	998	998
#13—Oil Pump House	3	270	810
#14—Meter House	1	1,944	1,944
#15—Stable	20	2,487	49,740
#16—Boiler House	4	983	3,932
#17—Fire Brick Storage House	5	138	690
#35—Fire Hose House	5	47	235
#53—Coke Shed	23	758	17,434
#54—Coke Rack	5	105	315
#55—Oil Barrel Store House	18	122	2,196
Total	..	86,924	1,584,661

Composite Age = 1,584,661 = 18.23 Yrs.
86,924

659 *Determination of Composite Life of Contents of Buildings—Value on Reproduction New Basis.*

Classification,			Value.	Life.	Times renewed in 50 yrs.	Total expenditures in 50 yrs.	Total dollar years.
Contents	Bldg.	# 1—A & B	$27,032	50	1	$27,032	$1,351,600
"	"	# 3	32,482	30	1⅔	54,137	1,624,910
"	"	# 4—A. B. & C	30,156	30	1⅔	50,260	1,507,800
"	"	# 5—A & B	1,399	30	1⅔	2,332	69,960
"	"	# 6—A & B	19,474	25	2	38,948	973,700
"	"	# 6—C	2,755	25	2	5,510	137,750
"	"	# 7	58,693	30	1⅔	97,822	2,934,660
"	"	# 8—A & B	2,154	30	1⅔	3,589	107,670
"	"	#10	1,289	20	2½	3,222	64,440
"	"	#12	1,581	20	2½	3,952	79,040
"	"	#13	373	20	2½	933	18,660
"	"	#14	11,565	30	1⅔	19,275	578,250
"	"	#16	1,927	25	2	3,854	96,350
Total			190,880	..	...	130,866	9,544,790

Composite Life = $\frac{9,544,790}{310,866}$ = 30.7 Yrs.

660 *Determination of Composite Age of Contents of Buildings—Reproduction New Value.*

Classification.	Age.	Value.	Age dollars.
Contents Bldg. # 1—A & B.....	17	$27,032	$459,544
" " # 3.....	7.1	32,482	230,622
" " # 4.....	18	30,156	542,808
" " # 5.....	6	1,399	8,394
" " # 6—A & B.....	7	19,474	136,318
" " # 6—C.....	1	2,755	2,755
" " # 7.....	1	58,693	58,693
" " # 8—A & B.....	12	2,154	25,848
" " #10.....	5	1,289	6,445
" " #12.....	3.5	1,581	5,534
" " #13.....	3	373	1,119
" " #14.....	1	11,565	11,565
" " #16.....	3	1,927	5,781
Total.....	..	190,880	1,495,426

Composite Age = $\frac{1,495,426}{190,880} = 7.83.$

661 *Determination of Composite Life of Outside Apparatus, Holders, Tanks & Sundry Equipment—Value on Reproduction New Basis.*

Classification.	Value.	Life.	Times renewed in 50 yrs.	Total expenditure in 50 yrs.	Total dollar years.
Relief Holder # 18	$38,572	50	1	$38,572	$1,928,600
Storage Holder # 19	58,887	50	1	58,887	2,944,350
Storage Holder # 20	135,416	50	1	135,416	6,770,800
Old Storage Holder # 21	7,488	50	1	7,488	374,400
Old Storage Holder # 22	4,209	50	1	4,209	210,450
Tar Evaporator # 23	1,889	50	1	1,889	94,450
Oil Tanks # 24 # 25	19,509	50	1	19,509	975,450
Old Holder Oil Tank # 36	193	50	1	193	9,650
Pipe Coating Tank # 60	78	50	1	78	3,900
Holder Oil Tank # 58	627	50	1	627	31,350
Wells, Valves, Boxes, etc	3,170	30	1⅔	5,283	158,490
Pine Lumber in Yard	90	20	2½	225	4,500
Fencing & Gates	3,041	20	2½	7,602	152,040
Yard Paving	3,664	50	1	3,664	183,200
Small Piping	15,723	30	1⅔	26,205	786,150
Gas Mains in Works Yard	20,535	50	1	20,535	1,026,750
Electric Wiring	212	30	1⅔	353	10,590
Works, Tools	3,215	10	5	16,075	160,750
Fire Protection	407	20	2½	1,017	20,340
Works Fixtures	5,583	30	1⅔	9,305	279,150
Gauges	812	20	2½	2,030	40,600
Misc. Outside Apparatus	2,551	20	2½	6,377	127,540
Total	325,871	..	..	365,539	16,293,500

Composite Life = 16,293,500 / 325,871 = 44.6 Yrs.

662 *Determination of Composite Age of Outside Apparatus, Holders, Tanks & Sundry Equipment—Reproduction New Value.*

Classification.	Age.	Value.	Age dollars.
Relief Holder #18	28	$38,572	$1,080,016
Storage " #19	18	58,887	1,059,966
" " #20	7	135,416	947,912
Oil Storage Tank #21	8	7,488	59,904
" " " #22	13	4,209	54,717
Tar Evaporator #23	19	1,889	35,891
Oil Tanks #24 & #25	2	19,509	39,018
Old Holder Oil Tank #36	17	193	3,281
Pipe Coating Tank #60	10	78	780
Holder Oil Tank #58	6	627	3,762
Wells, Valve, Boxes, etc	15	3,170	47,550
Pine in Lumber Yard	0	90	.....
Fences and Gates	5	3,041	15,205
Yard Paving	9	3,664	32,976
Small Piping	5	15,723	78,615
Gas Mains in Works Yards	10	20,535	205,350
Electric Wiring	5	212	1,060
Works Tools	2	3,215	6,430
Fire Protection	5	407	2,035
Works Fixtures	8	5,583	44,664
Gauges	5	812	4,060
Mis'l. Outside Apparatus	10	2,551	25,510
Total	..	325,871	3.748,702

Composite Age = $\frac{3,748,702}{325,871}$ = 11.5 Yrs.

663 *Determination of Composite Life of General Office & Stable Equipment—Value on Reproduction New Basis.*

Classification.	Value.	Life.	Times renewed in 50 yrs.	Total expenditures in 50 yrs.	Total dollar years.
Furniture & Fixtures	$18,047	30	1 2/3	$30,078	$902,340
Book Records	12,877	50	1	12,877	643,850
Stable Equipment	14,625	20	2½	36,562	731,240
Total	45,549	..	....	79,517	2,277,430

Composite Life = $\frac{2,277,430}{79,517}$ = 28.6 Yrs.

664 *Determination of Composite Age of General Office & Stable Equipment—Value on Reproduction New Basis.*

Classification.	Value.	Age.	Age dollars.
Furniture & Fixtures	$12,047	1	$18,047
Book Records	12,877	8	103,016
Stable Equipment	14,625	5	73,125
Total	45,549	..	194,188

Composite Age = $\frac{194,188}{45,549} = 4.26$ Yrs.

665 *Distribution System, Condition Per Cent, and Reproduction New and Present or Depreciated Values.*

Classification.	Reproduction New value.	Cond. %	Present or depreciated value.
Street Mains	$930,746	95.2	$886,070
Paving Over Mains	350,939	95.2	334,094
River Pipes	49,500	95.2	47,124
Street Main Valves & Drips	6,582	95.2	6,266
Steam & Street R. R. Crossings	9,056	95.2	8,621
Services—House	310,383	68.0	211,060
Services—Lamp	22,748	68.0	15,469
Paving Over Services	42,322	68.0	28,779
Meters in Use	255,885	77.1	197,287
" " Stock	8,422	77.1	6,493
Distribution Tools	6,660	85.0	5,661
Total	1,993,243	87.7	1,746,924

The above condition per cents, with the exception of the one on distribution tools, were figured from the following formula:—

$$\text{Condition Per Cent} = 1 - \frac{(1+r)^m - 1}{(1+r)^n - 1}$$

Where m = Age in years.
" n = Life " "
" r = Rate of Interest = 4%

666 *Determination of Composite Life of Distribution System—Value on Reproduction, New Basis.*

Classification.	Value.	Times renewed in 58.1 yrs.	Life.	Total expenditures in 58.1 yrs.	Total dollar years.
Street Mains	$930,746	1.0	58.1	$930,746	$54,076,343
Paving Over Mains	350,989	1.0	58.1	350,939	20,389,556
River Pipes	49,500	1.162	50.0	57,519	2,875,950
Street Mains, Valves and Drips	6,582	1.0	58.1	6,582	382,414
Steam & Street R. R. Crossings	9,056	1.0	58.1	9,056	526,154
Services—House	310,383	2.905	20.0	901,663	18,033,260
Services—Lamp	22,748	2.905	20.0	66,083	1,321,660
Services Paving	42,322	2.905	20.0	122,945	2,458,900
Meters in Use	255,885	2.324	25.0	594,677	14,866,925
Meters in Stock	8,422	2.324	25.0	19,573	489,325
Distribution Tools	6,660	5.810	10.0	38,695	386,950
Total	1,993,243	.....	....	3,098,478	115,807,437

Composite Life $= \frac{115,807,437}{3,098,478} = 37.4$ Yrs.

667 *Determination of Composite Age of Distribution System—Value on Reproduction, New Basis.*

Classification.	Value.	Age.	Age dollars.
Street Mains	$930,746	8.9	$8,263,659
River Pipes	49,500	6.6	326,700
Paving Over Mains	350,939	8.9	3,123,357
Street Mains, Valves & Drips	6,582	8.9	58,580
Steam & Street R. R. Crossings	9,056	8.9	80,598
House Services	310,383	8.23	2,554,452
Lamp Services	22,748	8.23	187,216
Paving Over Services	42,322	8.23	348,310
Meters in Use	255,885	8.23	2,105,934
Meters in Stock	8,422	8.23	69,313
Distribution Tools	6,660	2.0	13,320
Total	1,993,243	....	17,131,439

$$\text{Composite Age} = \frac{17,131,439}{1,993,243} = 8.6 \text{ Yrs.}$$

668 *Determination of Composite Life of Street Mains on the Investment Basis, Not Including River Pipe.*

Size.	Reproduction. New value.	Life.	Times renewed in 75 yrs.	Total expenditures in 75 yrs.	Total dollar years.
2½" and under.	$15,275	20	3¾	$57,281	$1,145,620
3"	18,154	30	2½	45,385	1,361,550
4"	405,699	50	1½	608,549	30,427,450
6"	162,466	75	1	162,466	12,184,950
8"	85,991	75	1	85,991	6,449,325
10"	54,736	75	1	54,736	4,105,200
12"	67,716	75	1	67,716	5,078,700
14"	1,678	75	1	1,678	125,850
16"	86,052	75	1	86,052	6,453,900
20"	26,076	75	1	26,076	1,955,700
24"	6,903	75	1	6,903	517,725
Total	930,746	..	...	1,202,833	69,805,970

$$\text{Composite Life} = \frac{69,805,970}{1,202,833} = 58.1 \text{ Yrs.}$$

669 *Determination of Average Age of Mains on Investment Basis Not Including River Pipes—Base Figures Only.*

Laid in year	Investment.	Years in service.		Investment years.
1910	$61,520	0		.....
1909	44,618	1		$44,618
1908	32,487	2		64,974
1907	55,398	3		166,194
1906	124,317	4		497,268
1905	101,365	5		506,825
1904	34,951	6		209,706
1903	65,887	7		461,209
1902	39,325	8		314,600
1901	65,284	9		587,556
1900	12,312	10		123,120
1899	29,372	11		323,092
1898	31,642	12		379,704
1897	46,776	13		607,088
1896	46,477	14		650,678
1895	7,418	15		111,270
1894	490	16		7,840
1893	5,708	17		97,036
1892	2,224	18		40,032
1891	23,325	19		443,175
1890	14,245	20		284,900
1889	22,167	21		465,507
1888	2,603	22	(Average 7.41 yrs.)	57,266
1888–1864	60,835	30		1,825,050
Total	930,746	..		8,269,708

22 : 7.41 :: 24 : x x = 8.08

Average Age = $\frac{8,269,708}{930,746}$ = 8.9 Years.

Laid in year	Age or No. of years in service.	2⅛″ and under.	3″.	4″.	6″.	8″.	10″.	12″.	14″.	16″.	20″.	24″.
1910	0	1,640	.....	55,719	11,382	6,854	543	.....	.....	.....	.....	.....
1909	1	265	.....	40,809	2,159	2,875	3,377	159	.....	1,132	.....	.....
1908	2	.....	.....	32,017	158	1,522	.....	372	.....	.....	.....	1,180
1907	3	414	.....	26,374	4,876	3,122	1,851	4,750	.....	4,456	.....	.....
1906	4	11,432	1,317	47,841	40,248	5,567	1,256	3,525	.....	294	6,036	.....
1905	5	281	.....	50,864	17,618	7,506	2,661	4,930	.....	7,107	.....	.....
1904	6	.....	.....	18,143	3,951	.....	587	5,055	.....	1,974	.....	.....
1903	7	.....	.....	29,423	4,345	5,844	4,880	4,308	.....	4,853	.....	.....
1902	8	.....	439	19,101	5,537	7,787	4,015	1,329	.....	.....	.....	.....
1901	9	13,008	.....	24,461	7,520	6,514	4,733	2,793	.....	3,741	.....	.....
1900	10	.....	1,174	10,354	2,437	1,500	.....	.....	.....	.....	.....	.....
1899	11	.....	.....	18,016	3,324	2,382	4,751	.....	.....	634	.....	.....
1898	12	.....	954	26,136	3,370	6,603	314	.....	.....	.....	.....	.....
1897	13	.....	.....	34,853	13,118	1,204	2,354	1,565	.....	.....	.....	.....
1896	14	.....	1,971	47,119	11,188	.....	.....	433	.....	.....	.....	.....
1895	15	.....	392	3,078	2,810	516	.....	712	.....	.....	.....	.....
1894	16	.....	.....	692	.....	.....	.....	.....	.....	.....	.....	.....
1893	17	.....	.....	5,135	2,076	.....	.....	.....	.....	.....	.....	.....
1892	18	.....	.....	431	1,915	.....	.....	.....	.....	.....	.....	.....
1891	19	1,020	340	9,989	3,026	.....	.....	1,418	.....	3,015	.....	.....
1890	20	642	1,940	11,422	4,856	.....	.....	.....	.....	.....	.....	.....
1889	21	472	1,810	25,021	3,325	.....	.....	.....	.....	.....	.....	.....
1888	22	.....	.....	3,685	.....	.....	.....	.....	.....	.....	.....	.....
1864 to 1888	30.1	4,772	24,964	33,041	12,765	5,138	686	.....	622	.....	.....	.....
Totals	....	33,947	35,301	573,724	162,004	64,934	32,008	31,349	622	27,206	6,036	1,180

NOTE.—All mains abandoned or taken up is figured as having been laid prior to 1888. The average age of all mains in use on Jan. 1, 1888, is figured at 8.1 years. There are no records available of feet of each size main laid in each year from 1864 to 1888. We therefore proceeded on the assumption that the age ratio of the mains laid during 1864–1888 on Jan. 1, 1888, was the same as the age ratio of the mains laid during 1888–1911 on Jan. 1, 1911.

We figured the average age from 1888 to date, on the investment basis, which we found to be 7.4 years. Then the ratio was figured as follows:

$$7.4 : 22 :: x : (1888–1864 = 24)$$
$$x = 8.1$$

Year.	2¾″ and under.	3″.	4″.	6″.	8″.	10″.	12″.	14″ and 16″.	20″ and 24″.	Total.
1910	738	.....	39,368	11,406	9,079	929	.....	.....	.....	61,520
1909	120	.....	28,836	2,164	3,804	5,770	344	3,580	.....	44,618
1908	.....	.....	22,604	159	2,016	.....	805	.....	6,903	32,487
1907	186	.....	18,644	4,892	4,131	3,161	10,264	14,120	.....	55,398
1906	5,145	677	33,930	40,420	7,384	2,145	7,610	930	26,076	124,317
1905	126	.....	35,970	17,659	9,945	4,550	10,655	22,460	.....	101,365
1904	.....	.....	12,820	3,963	.....	1,003	10,915	6,250	.....	34,951
1903	.....	.....	20,804	4,354	7,740	8,349	9,300	15,340	.....	65,887
1902	.....	236	13,508	5,552	10,299	6,860	2,870	.....	.....	39,325
1901	5,851	.....	17,286	7,548	8,629	8,100	6,040	11,830	.....	65,284
1900	.....	552	7,334	2,441	1,985	.....	.....	.....	.....	12,312
1899	.....	.....	12,740	3,332	3,158	8,140	.....	2,002	.....	29,372
1898	.....	490	18,486	3,381	8,748	537	.....	.....	.....	31,642
1897	.....	.....	24,640	13,146	1,590	4,020	3,380	.....	.....	46,776
1896	.....	1,016	33,320	11,206	.....	.....	935	.....	.....	46,477
1895	.....	202	2,176	2,819	683	.....	1,538	.....	.....	7,418
1894	.....	.....	490	.....	.....	.....	.....	.....	.....	490
1893	.....	.....	3,627	2,081	.....	.....	.....	.....	.....	5,708
1892	.....	.....	304	1,920	.....	.....	.....	.....	.....	2,224
1891	459	175	7,054	3,037	.....	.....	3,060	9,540	.....	23,325
1890	288	1,000	8,094	4,863	.....	.....	.....	.....	.....	14,245
1889	212	933	17,690	3,332	.....	.....	.....	.....	.....	22,167
1888	.....	.....	2,603	.....	.....	.....	.....	.....	.....	2,603
1864 to 1888	2,150	12,873	23,371	12,791	6,800	1,172	.....	1,678	.....	60,835
								1,678	6,903	
Total	15,275	18,154	405,699	162,466	85,991	54,736	67,716	86,052	26,076	930,746

(Here follows paster, marked page 671.)

672 *Determination of Average Age of River Pipes on Investment Basis—Reproduction New Value.*

Laid.	Investment.	Years in service.	Investment years.
March, 1908	$12,856	2.5	$32,140
Dec., 1906	7,072	4.0	28,288
Sept., 1901	29,572	9.0	266,148
	49,500		326,576

Average Age = 326,576 / 49,500 = 6.6 Yrs.

Average Life = 50 Yrs.

673 *Determination of Average Age of Meters on Investment Basis, Base Figures Only—Reproduction New Value.*

Installed in year	Investment.	Years in service.	Investment years.
1910	$18,819	0	$0
1909	17,206	1	17,206
1908	13,209	2	26,418
1907	18,423	3	55,369
1906	21,667	4	87,468
1905	19,343	5	96,715
1904	13,372	6	80,232
1903	19,244	7	134,708
1902	15,628	8	125,024
1901	16,157	9	145,413
1900	14,352	10	143,520
1899	15,188	11	167,088
1898	8,339	12	100,068
1897	7,864	13	102,232
1896	4,888	14	68,432
1895	3,383	15	50,745
1894	2,292	16	36,672
1893	2,223	17	37,791
1892	1,979	18	35,622
1891	2,338	19	44,422
1890	2,572	20	51,440
1889	219	21	4,599
1888	219	22	4,818
1887	553	23 (Average 6.8 yrs.)	12,759
1864–1886	16,208	29.5	478,136
Total	255,885	23 : 6.8 :: 22 : x = 6.5 yrs.	2,106,797

Average Age of Meters Installed before 1886.

Average Age = 2,106,797 / 255,855 = 8.23 Yrs.

Average Life = 25 Yrs.

701 *Sundry Equipment Showing Additional Cost Items—Circulation Piping—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Excavation	$76	$14.82	$1.86	$5.02	$97.70
Wrought Iron Pipe	417	81.32	10.20	27.50	536.02
Valves	140	27.30	3.43	9.25	179.98
Terra Cotta Tile Pipe	19	3.71	0.47	1.25	24.43
Total	652	127.	16.	43.	838.

702 *Sundry Equipment Showing Additional Cost Items—Steam Piping—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Excavation	$78	$15.21	$1.93	$5.15	$100.29
Wrought Iron Pipe	925	180.38	22.95	61.00	1,189.33
Pipe Covering	863	168.48	21.40	57.00	1,109.88
Valves	596	116.22	14.80	39.30	766.32
Steam Hose	35	6.83	0.88	2.31	45.02
Total Steam Piping	2,497	487.	62.	165.	3,211.

703 *Sundry Equipment Showing Additional Cost Items—Steam Piping, Leased Property—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Wrought Pipe	$87.24	$17.02	$2.14	$5.76	$112.16
Covering	65.00	12.50	1.59	4.29	83.38
Boxing	12.00	2.34	0.29	0.79	15.42
Excavation & Backfilling	60.00	11.70	1.47	3.96	77.13

698 *Paving in Yard Showing Additional Cost Items—Reproduction New Value.*

Amount.	Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
329 sq. yds.	Brick on edge on Concrete	$987	$192.47	$24.22	$65.10	$1,268.79
269 sq. yds.	Brick flat on Concrete	673	131.23	16.52	44.35	865.10
105 sq. yds.	Wood Block	315	61.43	7.75	20.76	404.94
2,800 sq. ft.	Brick Laid flat	420	81.90	10.32	27.70	539.92
1,267 sq. ft.	Cement Sidewalk	188	36.66	4.62	12.40	241.68
21 cu. yds.	Curbing	267	52.07	6.56	17.62	343.25
	Total	2,850	556.	70.	188.	3,664.

699 *Sundry Equipment Showing Additional Cost Items—Water Piping—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Excavation	$311	$60.65	$7.61	$20.55	$399.81
Wrought Iron Pipe	1,239	241.60	30.30	81.80	1,592.70
Valves	546	106.47	13.40	36.00	701.87
Cast Iron Pipe	31	6.05	0.76	2.05	39.86
" " Specials	33	6.44	0.81	2.18	42.43
Total	2,160	421.	53.	143.	2,777.

700 *Sundry Equipment Showing Additional Cost Items—Water Piping, Leased Property—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Wrought Pipe	$13.32	$2.60	$0.33	$0.88	$17.13
Valves	9.46	1.85	0.23	0.63	12.17
Total	23.	4.	1.	2.	30.

696 *Plant Apparatus Showing Additional Cost Items—Outside Apparatus—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
1—Davidson Pump 2"x2½"x4"	$45	$8.78	$1.11	$2.97	$57.86
1—Fairbanks Scales (Track)	950	185.25	23.45	62.75	1,221.45
1—Standard Scales	275	53.63	6.80	18.20	353.63
1—Stiff Leg Derrick	150	29.25	3.71	9.90	192.86
4—Oil Unloading Devices	114	22.22	2.82	7.52	146.56
3—Tar Separators	450	87.75	11.10	29.70	578.55
Total	1,984	387.	49.	131.	2,551.

697 *Sundry Equipment Showing Additional Cost Items—Wells, Fencing, and Gates—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Wells, Valve Boxes, etc.	$1,876	$365.82	$46.30	$124.00	$2,412.12
" " " "	589	114.86	14.58	38.90	757.34
2,563' B. M. Pine Lumber T & G	70	13.65	1.73	4.62	90.00
Fencing and Gates	1,864	363.48	46.10	123.00	2,396.58
" " " leased property	501	97.70	12.38	33.05	644.13
Total	4,900	955.	121.	324.	6,300.

693 *Plant Apparatus Showing Additional Cost Items—Building No. 16—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Apparatus Foundations	$164	$32.00	$4.02	$10.38	$210.85
1—60 H. P. Phœnix Boiler	1,000	195.00	24.50	66.00	1,285.50
1—Steel Stack 27"x80"–0"	300	58.50	7.35	19.80	385.65
1—#80 World Injector	35	6.83	0.86	2.31	45.00
Total	1,499	292.	37.	99.	1,927.

694 *Plant Apparatus Showing Additional Cost Items—Holders—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
1—Relief Holder No. 18	$30,000	$5,850	$740	$1,982	$38,572
1—Storage " " 19	45,800	8,931	1,130	3,026	58,887
1— " " " 20	105,320	20,537	2,597	6,962	135,416
Total	181,120	35,318	4,467	11,970	232,875

695 *Plant Apparatus Showing Additional Cost Items Tar and Oil Tanks and Pipe Coating Tank—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
1—Oil Storage Tank #21	$5,824	$1,135.68	$143.55	$385.00	$7,488.00
1— " " " #22	3,274	638.43	80.60	216.20	4,209.23
1—Tar Evaporator #23	1,469	286.46	36.20	97.00	1,888.66
2—Oil Tanks #24 & #25	15,174	2,958.93	373.90	1,002.00	19,508.83
1—Old Holder Oil Tank #36	150	29.25	3.69	9.90	192.84
1—Pipe Coating Tank #60	61	11.90	1.50	4.03	78.43
1—Holder Oil Tank #58	488	95.16	12.10	32.20	627.46
Total	26,440	5,156.	652.	1,746.	33,894.

690 *Plant Apparatus Showing Additional Cost Items—Building No. 12—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
2—Davidson Simplex Water Pumps 6"x7"x10"	$440	$85.80	$10.97	$29.05	$565.64
1—Davidson Oil Pump 4½"x3¼"x6"	110	21.45	2.70	7.26	141.41
1—Davidson Oil Pump 4"x5"x8"	150	29.30	3.68	9.90	192.88
1—Warren Tar Pump 5¼"x3½"x5"	110	21.45	2.70	7.26	141.41
1—Davidson Tar Pump 4½"x3¼"x6"	110	21.45	2.70	7.26	141.41
1—Davidson Drip Pump 3½"x2½"x4	90	17.55	2.25	5.94	115.74
1—Davidson Drip " 6"x7"x10"	220	42.90	5.39	14.55	282.84
Total	1,230	240.	30.	81.	1,581.

691 *Plant Apparatus Showing Additional Cost Items—Building No. 13—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Foundations	$10	$1.95	$0.24	$0.66	$12.85
1—Davidosn Oil Pump 6"x8"x12"	280	54.60	6.85	18.50	359.95
Total	290	57.	7.	19.	373.

692 *Plant Apparatus Showing Additional Cost Items—Building No. 14—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Meter Foundations	$140	$27.30	$3.43	$9.23	$179.96
1—14'-0"x14'-0" Sta. Meter	8,000	1,560.00	196.50	528.50	10,285.00
Piping	856	166.92	21.05	56.50	1,100.47
Total	8,996	1,754.	221.	594.	11,565.

689 *Plant Apparatus Showing Additional Cost Items—Building No. 10—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Apparatus Foundations	$12	$2.34	$0.30	$0.79	$15.43
1—20″ Blower	15	2.93	0.37	0.99	19.29
1—Payne Engine 5″ x 6″	200	39.00	4.98	13.20	257.18
1—Drill Press	75	14.65	1.87	4.95	96.47
1—Screw Cutting Lathe	275	53.60	6.85	18.15	353.60
1—Grind Stone	20	3.90	0.50	1.32	25.72
1—Emery Wheel	20	3.90	0.50	1.32	25.72
1—Smith Forge	25	4.88	0.62	1.65	32.15
1—Anvil 135#	15	2.93	0.37	0.99	19.29
1— " 140#	15	2.93	0.37	0.99	19.29
2—Bench Vise 6″ Jaws	15	2.93	0.37	0.99	19.29
1—Pipe Vise	10	1.95	0.25	0.66	12.86
1—Gas Solder Iron Heater	5	.98	0.12	0.33	6.43
1—Curtis Thread Cutting Machine	150	29.30	3.74	9.90	192.94
Countershaft & Belting	150	29.30	3.74	9.90	192.94
Total	1,002	196.	25.	66.	1,289.

687 *Plant Apparatus Showing Additional Cost Items—Building No. 7—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Apparatus Foundations	$3,541	$690.50	$87.40	$233.90	$4,552.80
2—8′-6″ Lowe Water Gas Sets	22,000	4,290.00	542.20	1,453.00	28,285.20
1—10′-6″ " " " "	17,500	3,412.50	430.90	1,156.00	22,499.40
1—Vapor Extractor	450	87.75	11.10	29.70	578.55
1—Fairbanks Scales	25	4.88	0.62	1.65	32.15
1—Electric Pyrometer	150	29.30	3.70	9.90	192.90
8—Charging Barrows	520	101.40	12.80	34.30	668.50
1—98 H. P. Turbine Unit and Blower	1,450	282.75	35.75	95.75	1,864.25
1—Fairbanks Scales	15	2.93	0.37	0.99	19.29
Total	45,651	8,902.	1,125.	3,015.	58,693.

688 *Plant Apparatus Showing Additional Cost Items—Building 8 A & B—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
1—Fairbanks Std. Scales	$175	$34	$4	$12	$225
1—Steam Hydraulic Elevator	1,500	293	37	99	1,929
Total	1,675	327	41	111	2,154

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685 *Plant Apparatus Showing Additional Cost Items—Building 6 A & B—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Apparatus Foundations	$510	$99.45	$12.56	$33.70	$655.71
Piping	692	134.94	17.05	45.70	889.69
2—8′–6″ x 22′–0″ Condensers	4,500	877.50	110.90	297.50	5,785.90
2—Am. Ball Engines 10″ x 10″	1,950	380.25	48.00	128.90	2,507.15
1—20 Gal. Oil Filter	40	7.80	0.99	2.65	51.44
2—½ Pint Detroit Lubricators	25	4.88	0.62	1.65	32.15
1—12″ Belt, Double 86′–0″ long	160	31.20	3.94	10.57	205.71
2—#8 Sturtevant Blowers	900	175.50	22.15	59.40	1,157.05
2—125 H. P. Phœnix Tubular Boilers	3,000	585.00	73.90	198.10	3,857.00
2—Steel Stacks 34″ x 80′–0″	800	156.00	19.70	52.80	1,028.50
1—125 H. P. Murray Boiler	1,500	292.50	37.00	99.00	1,928.50
1—Steel Stack 34″ x 80′–0″	400	78.00	9.89	26.40	514.29
1—Davidson Pump 9 x 5¼″ x 12″	250	48.75	6.16	16.50	321.41
1—Feed Water Heater	200	39.00	9.93	13.21	257.14
1—American Injector	90	17.55	2.22	5.94	115.71
Boiler Supports 3,248#	130	25.35	3.20	8.58	167.13
Total	15,147	2,954.	373.	1,000.	19,474.

686 *Plant Apparatus Showing Additional Cost Items—Building No. 6 C—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Apparatus Foundations	$152	$29.61	$3.75	$10.15	$195.51
1—125 H. P. Phœnix Boiler	1,500	293.00	37.10	99.00	1,929.10
1—Steel Stack 34″ x 80′–0″	400	78.00	9.89	26.40	514.29
1—American Injector	90	17.55	2.22	5.94	115.71
Total	2,142	418.	53.	142.	2,755.

683 *Plant Apparatus Showing Additional Cost Items—Building No. 4—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Apparatus Foundations	$304	$59.20	$7.50	$20.10	$390.80
1—Payne Engine 8" x 10"	800	156.00	19.75	52.80	1,028.55
1— " " 6" x 8"	275	53.60	6.79	18.20	353.59
Countershafting & Belting	150	29.22	3.70	9.90	192.82
2—#6 Sturtevant Blowers	500	97.50	12.35	33.00	642.85
2—6'-0" Water Gas Sets including washers, scrubber and condenser	12,000	2,340.00	296.00	793.00	15,429.00
1—Steam Hydraulic elevator	375	73.13	9.25	24.80	482.18
1—Charging Coke Buggy	50	9.75	1.23	3.30	64.28
5—Benches of 6's	9,000	1,755.00	222.00	594.95	11,571.95
Total	23,454	4,573.00	579.00	1,550.00	30,156.00

684 *Plant Apparatus Showing Additional Cost Items—Building No. 5—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Apparatus Foundations	$288	$56.16	$7.05	$19.00	$370.21
1—Track and Charging Cars	800	156.00	19.60	52.80	1,028.40
Total	1,088	212.	27.	72.	1,399.

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Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Forward	$11,338	$2,210.87	$279.31	$749.52	$14,577.70

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
1—Stationary Wash Stand	5	0.98	0.12	0.33	6.43
1—Shower Bath	8	1.56	0.20	0.53	10.29
1—Flush Closet & Tank	16	3.12	0.39	1.06	20.57
1—Safety Blow Back	475	92.63	11.70	31.40	610.73
1—Drip Hand Pump	3	0.58	0.07	0.20	3.85
1—#8 Exhauster with 10″ x 12″ Engine	2,055	400.72	51.60	135.90	2,643.22
2—#7 Exhausters with 10″ x 9″ Engines	3,750	731.25	92.50	248.00	4,821.75
2—#5 H. P. Pushers with 9″ x 10″ Engines	3,400	663.00	83.50	225.00	4,371.50
1—P. & A. Tar Extractor	775	151.13	19.05	51.20	996.38
1—Work Bench 4′–0″ x 2′–0″	10	1.95	0.24	0.66	12.85
1—4″ Vise	7	1.37	0.17	0.46	9.00
1—Tank 3′–0″—Diam. x6′–0″	35	6.83	0.86	2.31	45.00
5—Stationary Wash Stands	25	4.88	0.62	1.65	32.15
2—Flush Closets	20	3.90	0.49	1.32	25.71
14—Metal Lockers	119	23.20	2.93	7.85	152.98
1—Enamel Bath Tub	25	4.88	0.62	1.65	32.15
1—Duplex Pump 7½″ x 5″ x 8″	175	34.13	4.31	11.57	225.01
1—Warren Duplex Pump 10″ x 6″ x 10″	240	46.80	5.91	15.90	308.61
1—Vertical Pump	325	63.38	8.00	21.50	417.88
Piping	2,457	479.12	60.50	162.10	3,158.72
Total	**25,263**	**4,926.00**	**623.00**	**1,670.00**	**32,482.00**

681 *Plant Apparatus Showing Additional Cost Items—Building No. 3—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Apparatus Foundations	$1,390	$271.00	$34.20	$91.95	$1,787.15
1—60″ Bar Photometer	500	97.50	12.30	33.00	642.80
1—Reserve Bar Photometer	350	68.25	8.62	23.10	449.97
2—Pontane Lamps	200	39.00	4.92	13.21	257.13
1—CO_2 Apparatus	20	3.90	0.49	1.32	25.71
1—Freezing Coil	38	7.41	0.94	2.51	48.86
2—Stop Watches	20	3.90	0.49	1.32	25.71
1—5′ 0″ Wet Meter	50	9.75	1.23	3.30	64.28
1—Hygrometer	50	9.75	1.23	3.30	64.28
1—Barometer	25	4.88	0.62	1.65	32.15
1—Transit, Complete	210	40.95	5.17	13.90	270.02
2—Tee Squares	5	0.98	0.12	0.33	6.43
1—Case 5 Test Tubes	1	.19	.03	.07	1.29
1—Medicine Chest	17	3.31	0.42	1.12	21.85
3—Sulphide Tests	75	14.63	1.85	4.95	96.43
1—Orsaat Apparatus	25	4.88	0.62	1.65	32.15
1—Still (Tar or Oil)	20	3.90	0.49	1.32	25.71
2—Double Metal Lockers	17	3.31	0.42	1.12	21.85
1—8′–0″ x 8′–0″ Sta. Meter	2,900	656.50	71.50	192.00	3,729.00
1—8′–0″ x 7′–6″ " "	2,800	546.00	69.00	185.00	3,600.00
1—16″ Connelly Automatic Governor	775	151.13	19.05	51.20	996.38
1—24″ Connelly Automatic Governor	1,850	360.75	45.60	122.20	2,378.55
Forward	11,338	2,210.87	279.31	749.52	14,577.70

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Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Forward	$67,430	$13,148	$1,664	$4,455	$86,697
No. 54 Coke Rack	82	16	2	5	105
No. 55 Oil Barrel Store House	95	19	2	6	122
Total	67,607	13,183	1,668	4,466	86,924

680 *Plant Apparatus Showing Additional Cost Items in Building No. 1 A & B—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
1—Steam Hydraulic Elevator	$475	$93	$12	$31	$611
4—Purifying Boxes—7′ x 20′ x 20′	18,000	3,510	443	1,190	23,143
1—Bucket Oxide Conveyor with Engine	1,325	258	33	88	1,704
Piping	1,224	239	30	81	1,574
Total	21,024	4,100	518	1,390	27,032

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
# 1—A & B Purifying House	$9,501	$1,853	$235	$628	$12,217
# 1—C Fire Brick Shed	91	18	2	6	117
# 3—Meter Gov., Exhauster and Wash Room	7,739	1,509	191	511	9,950
# 4—A, B & C Retort, Gen., & Blower House	5,042	983	124	333	6,482
# 5—A & B Coal Shed, Scrubber and Condenser Room	2,073	404	51	137	2,665
# 6—A & B Boiler and Engine Rooms	6,561	1,279	162	433	8,435
# 6—C Boiler House Extension	1,114	217	27	74	1,432
# 7—Generator House	13,921	2,715	344	920	17,900
# 8—A Coal Shed	6,862	1,338	169	454	8,823
# 8—B Coal Runway	325	63	8	21	417
#10—Smith, Carpenter Shop and Store Room	8,031	1,566	198	530	10,325
#11—Barrel Oil Store House	240	47	6	16	309
#12—Pump House	777	151	19	51	998
#13—Oil Pump House	210	41	5	14	270
#14—Meter House	1,512	295	37	100	1,944
#15—Stable	1,934	377	48	128	2,487
#16—Boiler House	764	149	19	51	983
#17—Fire Brick Storage House	107	21	3	7	138
#35—Fire Hose House	37	7	1	2	47
#53—Coke Shed	589	115	15	39	758
Total	67,430	13,148	1,664	4,455	86,697

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Forward	$435,545	$84,931	$10,740	$28,779	$559,995
Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Circulating Piping	652	127	16	43	838
Steam Piping	2,497	487	62	165	3,211
" " Leased Property	498	97	12	33	640
Exhaust Steam Piping	1,837	358	45	122	2,362
Oil Piping	2,189	427	54	145	2,815
Gas "	206	40	5	13	264
" " Leased Property	88	17	2	6	113
Tar Piping	402	78	10	26	516
Drain Piping	342	67	8	22	439
Sewer Piping	1,336	261	33	88	1,718
Gas Mains at Works	15,971	3,114	394	1,056	20,535
Electric Wiring	165	32	4	11	212
Works Tools	2,500	488	62	165	3,215
Fire Protection	316	62	8	21	407
Works Fixtures	4,342	847	107	287	5,583
Gauges	631	123	16	42	812
Total Plant	469,517	91,556	11,578	31,024	603,675

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Buildings	$67,607	$13,183	$1,668	$4,466	$86,924
Contents Bldg. # 1 A & B	21,024	4,100	518	1,390	27,032
" " # 3	25,263	4,926	623	1,670	32,482
" " # 4	23,454	4,573	579	1,550	30,156
" " # 5	1,088	212	27	72	1,399
" " # 6 A & B	15,147	2,954	373	1,000	19,474
" " # 6 C	2,142	418	53	142	2,755
" " # 7	45,651	8,902	1,125	3,015	58,693
" " # 8 A	175	34	4	12	225
" " # 8 B	1,500	293	37	99	1,929
" " #10	1,002	195	25	66	1,289
" " #12	1,230	240	30	81	1,581
" " #13	290	57	7	19	373
" " #14	8,993	1,754	221	594	11,565
" " #16	1,499	292	37	99	1,927
Relief Holder #.18	30,000	5,850	740	1,982	38,572
Storage Holder #19	45,800	8,931	1,130	3,026	58,887
" " #20	105,320	20,537	2,597	6,962	135,416
Tar, Oil, Pipe Coating Tanks	26,440	5,156	652	1,746	33,994
Outside Apparatus	1,984	387	49	131	2,551
Wells, Fencing & Gates	4,900	955	121	324	6,300
Works Paving	2,850	556	70	188	3,664
Water Piping	2,160	421	53	143	2,777
" " Leased Property	23	4	1	2	30
Total	435,545	84,931	10,740	28,779	559,995

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674 *General Summary on Basis of Reproduction New Value Showing Additional Cost Items.*

Classification.	Base.	1, 2 and 3.	Taxes	Interest.	Total.
Real Estate	$200,000	$11,000	$4,954	$13,275	$229,229
Plant	469,517	91,556	11,578	31,024	603,675
Distribution	1,551,202	301,331	38,243	102,467	1,993,243
Gen. Office and Stable Equipment	35,374	6,898	891	2,386	45,549
Total	2,256,093	410,785	55,666	149,152	2,871,693

675 *General Summary of Plant Showing Additional Cost Items—Reproduction New Value.*

Classification.	Base.	1, 2 and 3.	Taxes.	Interest.	Total
Buildings	67,607	$13,183	$1,668	$4,466	$86,924
Contents of Bldgs	148,461	28,951	3,659	9,809	190,880
Outside Apparatus, Holders Tanks and Sundry Equipment	253,449	49,422	6,251	16,749	325,871
Total	469,517	91,556	11,578	31,024	603,375

In Building No. 50:					
Wrought Pipe	234.00	45.63	5.74	15.45	300.82
Valves	40.00	7.69	0.98	2.64	51.31
Total	498.	97.	12.	33.	640.

704 *Sundry Equipment Showing Additional Cost Items—Exhaust Steam Piping—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Wrought Iron Pipe	$842	$164.19	$20.60	$55.80	$1,082.59
Valves	173	33.74	4.24	11.42	222.40
Radiators	28	5.46	0.69	1.85	36.00
Pipe Covering	474	92.43	11.60	31.30	609.33
Exhaust Heads	126	24.57	3.09	8.32	161.98
Steam Traps	124	24.18	3.04	8.18	159.40
Separators	70	13.65	1.72	4.62	89.99
Total	1,837	358.	45.	122.	2,362.

705 *Sundry Equipment Showing Additional Cost Items—Oil Piping—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Wrought Iron Pipe	$945	$184.28	$23.15	$62.40	$1,214.83
Cast Iron Pipe	527	102.76	12.90	34.80	677.46
Joints and Profit	307	59.86	7.52	20.30	394.68
Valves	262	51.09	6.42	17.30	336.81
Excavation & Backfilling	148	28.86	3.63	9.75	190.24
Total	2,189	427.	54.	145.	2,815.

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706 *Sundry Equipment Showing Additional Cost Items—Gas Piping—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Piping for Lighting Plant Buildings	$206	$40	$5	$13	$264
Leased Property in Building #50:					
Gas Piping	88	17	2	6	113
Total Gas Piping	294	57	7	19	377

707 *Sundry Equipment Showing Additional Cost Items—Tar Piping—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Wrought Pipe	$289	$56.36	$7.08	$19.10	$371.54
Valves	25	4.38	0.61	1.65	32.14
Plug Cocks	9	1.76	0.22	0.59	11.57
Excavations	79	15.41	1.94	5.22	101.57
Total	402	78.	10.	26.	516.

708 *Sundry Equipment Showing Additional Cost Items—Drain Piping—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Excavation	$ 70	$13.65	$1.72	$4.62	$89.99
Wrought Iron Pipe	223	43.48	5.46	14.70	286.64
Terra Cotta Tile	9	1.76	0.22	0.59	11.57
Valves	40	7.80	0.98	2.64	51.42
Total	342	67.	8.	22.	439.

709 *Sundry Equipment Showing Additional Cost Items—Sewer Piping—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Excavation	$519	$101.20	$12.70	$34.30	$667.20
Terra Cotta Tile	492	95.94	12.10	32.45	632.49
Wrought Iron Pipe	241	47.00	5.90	15.90	309.80
Cast Iron Soil Pipe	84	16.38	2.08	5.54	108.00
Total	1,336	261.	33.	88.	1,718.

710 *Sundry Equipment Showing Additional Cost Items—Gas Mains in Works' Yard—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Excavation & Backfilling	$1,590	$310.05	$39.20	$105.00	$2,044.25
Cast Iron Pipe	6,820	1,329.90	168.10	450.70	8,768.70
Lead Joints	2,489	485.36	61.50	164.50	3,200.36
Specials:					
Drips	661	128.90	16.30	43.70	849.90
Valves	1,746	340.47	43.10	115.40	2,244.97
Other Specials	2,665	519.68	65.80	176.20	3,426.68
Total	15,971	3,114.	394.	1,056.	20,535.

711 *Sundry Equipment Showing Additional Cost Items—Electric Wiring—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Copper Wire	$31.00	$6.05	$0.76	$2.05	$39.81
½" Conduit	109.00	21.26	2.67	7.20	140.13
Lamps	8.80	1.72	0.22	0.58	11.32
Junction Boxes	6.00	1.17	0.15	0.40	7.72
Switches (Perkins)	1.08	0.21	0.30	0.07	1.39
" (Single Throw)	7.00	1.37	0.17	0.46	9.00
Fuse Plugs	.36	.07	0.01	0.03	0.47
Cut Outs	1.54	.30	0.04	0.10	1.98
Total	165.	32.	4.	11.	212.

712 *Sundry Equipment Showing Additional Cost Items—Works' Tools—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Works Tools	$2,500	$448.	$62.	$165.	$3,215
Total	2,500	488.	62.	165.	3,215

713 *Sundry Equipment Showing Additional Cost Items—Fire Protection—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
4 Keystone Fire Extinguishers	$40	$7.80	$0.98	$2.64	$51.42
4 Fire Pails	4	.78	0.10	0.26	5.14
1 Hose Reel	18	3.51	0.44	1.19	23.14
1 2″ Nozzle, 2′ 6″ long	13	2.53	0.32	0.86	16.71
4 50″ 0″ lengths 2″ hose	80	15.60	1.96	5.28	102.84
2 50′ 0″ " 2″ hose	40	7.80	0.98	2.64	51.42
2 2″ Nozzle 10″ long	12	2.34	0.29	0.79	15.42
1 Barrel	1	.19	0.03	0.07	1.29
3 Safety Fire Buckets	3	.59	0.07	0.20	3.86
1 Crest Water Meter	80	15.60	1.96	5.28	102.84
1 Fire Alarm Box	25	4.88	0.61	1.65	32.14
Total	316.	62.	8.	21.	407.

714 *Sundry Equipment Showing Additional Cost Items—Works' Fixtures—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Furniture, etc. (3rd & Vine)	$401	$78.20	$9.90	$26.45	$515.55
Fixtures in Bldg. #50	3,920	764.40	96.70	259.00	5,040.10
Rubbish Kiln	21	4.09	0.52	1.39	27.00
Total	4,342	847.	107.	287.	5,583.00

715 *Sundry Equipment Showing Additional Cost Items—Gauges—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
1 8″ U Gauge	$4	$ .78	$0.10	$0.26	$5.14
4 6″ U "	14	2.73	0.34	0.92	17.99
6 18″ " "	45	8.78	1.14	2.97	57.89
5 20″ " "	60	11.70	1.52	3.96	77.18
2 28″ " "	40	7.80	1.01	2.64	51.45
1 Steam "	3	.58	0.07	0.20	3.85
2 " "	9	1.76	0.22	0.59	11.57
6 Bristol Recording Pressure Gauges	330	64.35	8.36	21.80	424.51
9 Thermometers	90	17.55	2.28	5.93	115.76
Labor erecting gauges	36	7.02	0.89	2.38	46.29
Total	631	123.	16.	42.	812.

716 *Summary of Distribution System Showing Additional Cost Items, Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Street Mains	$723,914	$141,163	$17,849	$47,820	$930,746
River Pipes	38,500	7,508	949	2,543	49,500
Paving over Mains	272,953	53,226	6,729	18,031	350,939
Street Mains, Valves and Drips	5,120	998	126	338	6,582
Steam, Street R. R. Crossings	7,043	1,374	174	465	9,056
House Services	241,410	47,075	5,951	15,947	310,383
Lamp "	17,693	3,450	436	1,169	22,748
Paving over Services	32,917	6,419	812	2,174	42,322
Meters in use	199,024	38,810	4,905	13,146	255,885
Meters in Stock	7,448	298	184	492	8,422
Distribution Tools	5,180	1,010	128	342	6,660
Total	1,551,202	301,331	38,243	102,467	1,993,243

717 *Street Mains Showing Additional Cost Items, Reproduction New Value.*

Size.	No. of ft.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
2½" & Under	33,947	11,881	$2,317	$292	$785	$15,275
3"	35,301	14,120	2,753	348	933	18,154
4"	573,724	315,548	61,532	7,774	20,845	405,699
6"	162,004	126,363	24,641	3,116	8,346	162,466
8"	64,934	66,882	13,042	1,649	4,418	85,991
10"	32,008	42,571	8,301	1,052	2,812	54,736
12"	31,349	52,666	10,270	1,301	3,479	67,716
14"	622	1,306	254	32	86	1,678
16"	27,206	66,927	13,051	1,653	4,421	86,052
20"	6,036	20,281	3,955	500	1,340	26,076
24"	1,180	5,369	1,047	132	355	6,903
Total	968,311	723,914	141,163	17,849	47,820	930,746

718 *River Pipes Showing Additional Cost Items, Reproduction New Value.*

Size.	No. of ft.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
8"	673	$5,500	$1,073	137	$363	$7,073
16"	1,300	23,000	4,485	566	1,520	29,571
24"	639	10,000	1,950	246	660	12,856
Total	2,612	38,500	7,508	949	2,543	49,500

719 *Cost Due to Cutting and Replacing Paving Over Mains, Showing Additional Cost Items—Reproduction New Value.*

Sq. yds.	Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
35,667.1	Asphalt on Concrete Base	115,316	22,487	2,842	7,617	148,262
4,621.1	Wood Block on Concrete Base	10,268	2,002	253	679	13,202
44,368.5	Brick on Concrete Base	100,998	19,695	2,491	6,672	129,856
38,263.2	Brick on Sand Base	44,864	8,747	1,106	2,964	57,682
582.4	Macadam	564	110	14	37	725
565.0	Concrete (Cement)	943	184	23	62	1,212
124,067.3		272,953	53,226	6,729	18,031	350,939

720 *Street Main Valves and Drips Showing Additional Cost Items—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Line Pot Drips	$2,987	$582	$74	$197	$3,840
Valves	2,133	416	52	141	2,742
Total	5,120	998	126	338	6,582

721 *Railroad Crossings Showing Additional Cost Items—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Steam R. R. Crossings	$2,865	$559	$71	$189	$3,684
Street Car Crossings (Single)	2,270	443	56	150	2,919
" " " (Double)	1,908	372	47	126	2,453
Total	7,043	1,374	174	465	9,056

722 *Services Showing Additional Cost Items—Reproduction New Value.*

Number.	Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
17,170	House Services	$241,410	$47,075	$5,951	$15,947	$310,383
1,140	Lamp "	17,693	3,450	436	1,169	22,748
18,310	Total	259,103	50,525	6,387	17,116	333,131

723 *Cost Due to Cutting and Replacing Paving Over Services Showing Additional Cost Items—Reproduction New Value.*

Sq. yds.	Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
4,038.	Asphalt on Concrete	$13,204	$2,574	$326	$872	$16,976
504.	Wood Block on Concrete	1,127	220	28	74	1,449
57.	Macadam	57	11	1	4	73
7.3	Concrete (Cement)	13	3	0	1	17
4,562.	Brick on Sand	5,383	1,050	133	356	6,922
5,740.	" " Concrete	13,133	2,561	324	867	16,885
14,908.3	Total	32,917	6,419	812	2,174	42,322

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Meters in Use Showing Additional Cost Items—Reproduction New Value.

Number.	Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
915	3—Lt. Ordinary	$6,130	$1,195	$151	$405	$7,881
7,170	5—" "	54,492	10,626	1,345	3,600	70,063
1,008	10—" "	10,917	2,129	269	721	14,036
106	20—" "	1,540	300	38	102	1,080
72	30—" "	1,603	313	39	106	2,061
18	45—" "	581	113	14	38	746
9	60—" "	371	72	9	25	477
1	80—" "	54	11	1	4	70
3	100—" "	198	39	5	13	255
1	150—" "	95	18	2	6	121
1	200—" "	125	24	3	8	160
9,304	Total Regular	76,106	14,840	1,876	5,028	97,850
10,320	5—Lt. Prepayment	118,061	23,023	2,911	7,798	151,792
227	10—" "	3,258	635	80	215	4,188
10,547	Total	121,319	23,657	2,991	8,013	155,980
46	10—Lt. "A" Meters	548	107	13	36	704
4	30—" " "	96	19	2	6	123
1	60—" " "	55	11	1	4	71
51	Total	699	137	16	46	898
1	2000—Lt. Sta. Meter	900	176	22	59	1,157
19,903	Total of all Meters In Use	199,024	38,810	4,905	13,146	255,885

Number.	Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
178	3—Lt. Ordinary	$863	$34.52	$21.30	$57.00	$975.82
319	5—" "	1,835	73.40	45.44	121.47	2,075.31
166	10—" "	1,323	52.92	32.70	87.40	496.02
14	20—" "	160	6.40	3.92	10.57	180.89
4	30—" "	70	2.80	1.72	4.62	79.14
8	45—" "	211	8.44	5.17	13.95	238.56
3	60—" "	104	4.16	2.55	6.87	117.58
692	Total Regulars	4,566	182.64	112.80	301.88	5,163.32
248	5—Lt. Prepayment	2,346	93.84	58.00	155.00	2,652.34
39	10—" "	443	17.72	10.93	29.30	500.95
287	Total "	2,789	111.56	68.93	184.30	3,153.29
6	10—Lt. "A" Meters	54	2.16	1.32	3.56	61.04
2	30—" " "	39	1.56	0.96	2.57	44.09
8	Total "A" Meters	93	3.72	2.28	6.13	105.13
987	Total Meters Out of Use	7,448	298.	184.	492.	8,422.

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726 *Distribution Tools Showing Additional Cost Items—Reproduction New Value.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Distribution Tools	$5,180	$1,010	$128	$342	$6,660
Total	5,180	1,010	128	342	6,660

727 *Summary of General Office and Stable Equipment.*

Classification.	Base.	1, 2 & 3.	Taxes.	Interest.	Total.
Furniture & Fixtures	$14,015	$2,733	$353	$946	$18,047
Book Records	10,000	1,950	252	675	12,877
Stable Equipment	11,359	2,215	286	765	14,625
Total	35,374	6,898	891	2,386	45,549

728 *Detail of Method of Determining Condition Per Cent.*

The condition per cents used in the following tables, with the exception of those applied to the distribution system, were determined by inspection. A very careful inspection of the plant, buildings, apparatus etc., was made and the condition per cents were applied with full cognizance of the items, physical decay, supercession, inadequacy, obsolescence and scrap value.

Inasmuch as the various parts of the distribution system were not available for inspection, their condition per cents were arrived at by means of composite age and life tables, depreciation being figured on a sinking fund basis.

729 *Real Estate and Plant Buildings, Condition Per Cent, Reproduction New, and Present or Depreciated Values, Including Items* 1, 2 & 3—*Taxes and Interest.*

Classification.	Cost of reproduction new.	Cond. %.	Present or depreciated value.
Real Estate	$229,229	100	$229,229
Plant Buildings:			
No. 1 A & B. Purifying House	12,217	93	11,362
" 1 C. Fire Brick Shed	117	91	106
" 3. Meter, Gov., Exhauster & Wash Rooms	9,950	81	8,060
" 4 A, B & C. Retort, Gen., & Blower House	6,482	45	2,917
" 5 A & B. Coal Shed, Scrubber & Cond. Room	2,665	73	1,945
" 6 A & B. Boiler & Engine Rooms	8,435	96	8,098
" 6 C. Boiler House Extension	1,432	99	1,418
" 7. Generator House	17,900	97	17,363
" 8. Coal Shed	8,823	90	7,941
" 8 B. Coal Runway	417	90	375
" 10. Smith, Carpenter Shop & Store Room	10,325	74	7,641
" 11. Barrel Oil Store House	309	100	309
" 12. Pump House	998	100	998
" 13. Oil Pump House	270	99	267
" 14. Meter House	1,944	100	1,944
" 15. Stable	2,487	65	1,617
" 16. Boiler House	983	98	963
" 17. Fire Brick Storage House	138	50	69
" 35. Fire Hose House	47	90	42
Forward	85,939	...	73,435

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730	Forward	$85,939	...	$73,435
No. 53.	Coke Shed	758	25	189
No. 54.	Coke Rack	105	25	26
No. 55.	Oil Barrel Store House	122	75	91
	Total Plant Bldg's	86,924	84.8	73,741

731 *Plant Apparatus, Condition Per Cent, Reproduction New, and Present or Depreciated Values, Including Items* 1, 2 & 3—*Taxes and Interest.*

Classification.	Cost of reproduction new.	Cond. %.	Present or depreciated value.
Contents of Bldg. No. 1 A & B	.....	..	.....
Steam Hydraulic Elevator	$611	85	$520
4—Purifying Boxes	23,143	96	21,257
Oxide Conveyor with Engine	1,704	85	1,448
Piping for Boxes	1,574	96	1,511
Total Bldg. No. 1 A & B	27,032	91.5	24,736
Contents Bldg. No. 3:			
Apparatus Foundations	1,787	89	1,592
60" Bar Photometer	643	92	592
Reserve Photometer	450	92	414
2—Pentane Lamps	257	87	224
1—CO_2 Apparatus	26	87	23
1—Freezing Coil	49	87	43
2—Stop Watches	26	90	23
1—5'-0" Wet Meter	64	86	55
1—Hygrometer	64	92	59
1—Barometer	32	92	29
1—Transit-Complete	270	88	238
2—Tee Squares	6	86	5
1—Case 5 test tubes	1	100	1
1—Medicine Chest	22	85	19
3—Sulphide Tests	96	80	77
Forward	3,793	...	3,394
732 Forward	$3,793	...	$3,394
1—Orsat Apparatus	32	83	27
1—Still (Tar or Oil)	26	85	22
2—Metal Lockers	22	92	19
1—8'-0" x 8'-0" Station Meters	3,729	95	3,543
1—8'-0" x 7'-6" " "	3,600	95	3,420
1—16" Connelly Governor	996	85	846
1—24" " "	2,379	93	2,212

1—Stationary Wash Stand	6	80	5
1—Shower Bath	10	75	8
1—Flush Closet and Tank	21	75	16
1—Safety Blow Back	611	90	550
1—Drip Hand Pump	4	85	3
1—No. 8 Exhauster with 10″ x 12″ Engine	2,643	93	2,456
2—No. 7 Exhausters with 10″ x 9″ Engine	4,822	85	4,099
2—No. 5 H. P. Pushers with 9″ x 10″ Engines	4,372	82	3,585
1—P. & A. Tar Extractor	996	78	777
1—Work Bench 4′-0″ x 2′-0″	13	75	10
1—4″ Vase	9	86	8
1—Tank 3′-0″ Diam. x 6′-0″	45	86	39
5—Stationary Wash Stands	32	70	22
2—Flush Closets	26	60	16
14—Metal Lockers	153	80	112
1—Enamel Bath Tub	32	76	24
1—Duplex Pump 7½″ x 5″ x 8″	225	82	185
1—Warren Duplex Pump 10″ x 6″ x 10″	309	85	263
Forward	28,906	...	25,663
733 Forward	$28,906	70.4	$25,663
1—Vertical Pump	418	85	355
Piping	3,159	95	3,001
Total Contents Bldg. #3	32,483	89.5	29,019

734 *Plant Apparatus, Condition Per Cent, Reproduction New and Present or Depreciated Values, Including Items* 1, 2 & 3—*Taxes and Interest.*

Classification.	Cost of reproduction new.	Cond. %.	Present or depreciated value.
Contents Bldg. No. 4:			
Apparatus Foundations	$391	60	$235
1—Payne Engine 8″ x 10″	1,029	60	617
1— " " 6″ x 8″	354	60	212
Counter Shafting and Belting	193	60	116
2—#6 Sturtevant Blowers	643	60	386
2—6′-0″ Sets including Washers Scrubber and Condenser	15,429	70	10,800
1—Steam Hydraulic Elevator	482	50	241
1—Charging Coke Buggy	64	75	48
5—Benches of 6's	11,572	0	0
Total in Bldg. #4	30,157	42	12,655

Contents Bldg. #5:			
Apparatus Foundations.....	370	80	296
Track and Charging Cars.....	1,028	80	822
Total in Bldg. #5.....	1,398	80	1,118
Contents Bldg. #6 A & B:			
Apparatus Foundations.....	656	95	623
Piping	890	97	864
2—8′-6″ x 22′-0″ Condensers.....	5,786	98	5,670
2—Am. Ball Engines 10″ x 10″....	2,507	95	2,382
1—20 Gallon Oil Filter.....	51	93	47
Forward	9,890	...	9,586
735 Forward	$9,890	...	$9,585
2—½ Pt. Detroit Lubricators.....	32	95	30
1—12″ Double Belt 86′-0″ long....	206	95	196
2—No. 8 Sturtevant Blowers.....	1,157	95	1,099
2—125 H. P. Phœnix Boilers.....	3,857	86	3,317
2—Steel Stacks 34″ x 80′-0″.....	1,029	86	885
1—125 H. P. Phœnix Boiler.....	1,929	87	1,678
1—Steel Stack 34″ x 80′-0″.....	514	87	448
1—Davidson Pump 9″ x 5¼″ x 12″.	321	82	264
1—Feed Water Heater.....	257	25	64
1—American Injector.....	116	87	101
Boiler Supports—3,248#.....	167	89	149
Total Contents Bldg. No. 6 A & B.....	19,475	91.5	17,816
Contents Bldg. No. 6 C:			
1—125 H. P. Phœnix Boiler.....	1,929	97	1,871
Foundations	196	97	190
1—Steel Stack.....	514	97	499
1—American Injector.....	116	97	113
Total Contents Bldg. No. 6 C.	2,755	97.1	2,673
Contents Bldg. No. 7:			
Apparatus Foundations.....	4,553	99	4,508
2—8′-6″ Lowe W. G. Sets.....	28,285	98	27,719
1—10′-6″ " " "	22,499	100	22,499
1—Vapor Extractor.....	579	99	573
1—Fairbanks Scales.....	32	92	29
Forward	55,948	...	55,328

736 Forward	$55,948	...	$55,328
1—Electric Pyrometer	193	97	188
8—Charging Barrows	669	96	642
1—98 H. P. Turbine & Blower	1,864	98	1,827
1—Fairbanks Scales	19	92	17
Total Contents Bldg. #7	58,693	99	58,002
Contents Bldg. No. 8 A & 8 B:			
1—Fairbanks Scales	225	75	169
1—Steam Hydraulic Elevator	1,929	87	1,678
Total Contents Bldg. 8 A & 8 B	2,154	85.6	1,847
Contents Bldg. #10:			
Apparatus Foundations	15	98	15
1—20" Blower	19	97	17
1—Payne Engine 5" x 6"	257	99	254
1—Drill Press	96	96	92
1—Screw Cutting Lathe	354	96	340
1—Grind Stone	26	95	25
1—Emery Wheel	26	95	25
1—Smith Forge	32	98	31
1—Anvil 135#	19	98	19
1— " 140#	19	98	19
2—Bench Vises 6" Jaws	19	97	18
1—Pipe Vise	13	98	13
1—Gas Solder Iron Heater	6	96	6
1—Curtis Thread Cutting Machine	193	94	181
Forward	1,094	...	1,056
737 Forward	$1,094	...	$1,056
Counter Shafting & Belting	193	98	189
Total Contents Bldg. #10	1,287	96.6	1,245
Contents Bldg. #12:			
2—Davidson Water Pumps 6" x 7" x 10"	566	97	549
1—Davidson Oil Pumps 4½" x 3¼" x 6"	141	97	137
1—Davidson Oil Pumps 4" x 5" x 8"	193	98	189
1—Warren Tar Pump 5¼" x 3½" x 5"	141	96	135
1—Davidson Tar Pump 4½" x 3¼" x 6"	141	97	137

1—Davidson Drip Pump 3½" x 2½" x 4"	116	94	109
1—Davidson Drip Pump 6" x 7" x 10"	283	97	275
Total Contents Bldg. #12...	1,581	96.7	1,531
Contents Bldg. #13:			
1—Davidson Oil Pump 6"x 8" x 12"	360	95	342
Foundations	13	95	12
Total Contents Bldg. #13...	373	95	354
Contents Bldg. #14:			
Meter Foundations	180	100	180
1—14' Station Meter	10,285	100	10,285
Piping	1,100	100	1,100
Total Contents Bldg. #14..	11,565	100	11,565
Contents Bldg. #16:			
Apparatus Foundation	211	98	207
1—60 H. P. Phœnix Boiler	1,286	98	1,260
1—Steel Stack 27" x 80'-0"	386	98	378
1—No. 80 World Injector	45	98	44
Total Contents Bldg. #16..	1,928	98	1,889

738 *Plant Apparatus, Condition Per Cent, Reproduction New and Present or Depreciated Values, Including Items* 1, 2, & 3—*Taxes and Interest.*

Classification.	Cost of reproduction new.	Cond. %.	Present or depreciated value.
Holders:			
1—Relief Holder No. 18	$38,572	85	$32,786
1—Storage " " 19	58,887	95	55,943
1— " " " 20	135,416	98	132,708
Total Holders	232,875	95	221,437
Tar and Oil Tanks and Pipe Coating Tank:			
1—Oil Storage Tank No. 21	7,488	98	7,338
1—" " "b " 22	4,209	98	4,125
1—Tar Evaporator No. 23	1,889	94	1,776
2—Oil Tanks No. 24 & No. 25	19,509	100	19,509
1—Old Holder Oil Tank No. 36	193	82	158
1—Pipe Coating Tank No. 60	78	85	66
1—Holder Oil Tank No. 58	627	87	547
Total Tanks	33,993	98.7	33,519

Outside Apparatus:			
1—Davidson Pump 2″ x 2½″ x 4″..	58	90	52
1—Fairbanks Track Scales.....	1,221	35	428
1—Standard Scales.....	354	90	319
1—Stiff Leg Derrick.....	193	87	168
4—Oil Unloading Devices.....	147	93	137
3—Tar Separators.....	579	88	510
Total Outside Apparatus....	2,552	63.3	1,614

739 *Sundry Equipment, Condition Per Cent, Reproduction New and Present or Depreciated Values, Including Items* 1, 2 *&* 3—*Taxes and Interest.*

Classification.	Cost of reproduction new.	Cond. %.	Present or depreciated value.
Wells, Valve Boxes, etc.....	$3,169	85	$2,694
Pine Lumber in Yard.....	90	98	88
Fencing and Gates.....	2,397	95	2,277
" " " leased property..	644	95	612
Paving in Yard.....	3,664	79	2,895
Water Piping.....	2,807	87	2,442
Circulation Piping.....	838	84	704
Steam Piping.....	3,851	83	3,196
Exhaust Steam Piping.....	2,362	84	1,984
Oil Piping.....	2,815	89	2,505
Gas "	377	95	359
Tar "	516	81	418
Drain Piping.....	439	90	395
Sewer "	1,718	90	1,546
Gas Mains in Works Yard.....	20,535	95	19,508
Electric Wiring.....	212	90	191
Works Tools.....	3,215	85	2,733
Fire Protection.....	407	85	346
Works Fixtures.....	5,583	85	4,746
Gauges	812	90	731
Total Sundry Equipment...	56,451	89.2	50,370

740 *General Office and Stable Equipment, Condition Per Cent, Reproduction New and Present or Depreciated Value, Including Items* 1, 2 *&* 3—*Taxes and Interest.*

Classification.	Cost of reproduction new.	Cond. %.	Present or depreciated value.
Furniture & Fixtures.....	$18,047	98	$17,686
Book Records.....	12,877	99	12,748
Stable Equipment	14,625	66	9,653
Total General Office and Stable.	45,549	88	40,087

741 *Past and Estimated Future Gas Sales of Going Plant During the Development Period—M Cubic Feet.*

Year.	Sales in Des Moines.	Sales in Valley Junction.	Total sales both places.	Increase in cu. ft. in total over previous yrs.	Per cent increase in total over previous yr.
1900.....	.....	.....	141,929	32,108	29.2
1901.....	.....	.....	160,990	19,061	13.4
1902.....	.....	.....	206,764	45,774	28.4
1903.....	.....	.....	244,246	37,482	18.2
1904.....	.....	.....	292,407	48,161	19.7
1905.....	.....	.....	334,405	31,998	14.4
1906.....	.....	.....	372,102	37,697	11.3
1907.....	.....	.....	429,519	57,417	15.4
1908.....	.....	.....	461,178	31,659	7.3
1909.....	.....	.....	497,245	36,067	7.8
1910.....	525,102	6,889	531,991	34,746	7.0
		Future.			
1911.....	558,670	7,330	566,000	34,009	6.4
1912.....	592,230	7,770	600,000	34,000	6.02
1913.....	624,800	8,200	633,000	33,000	5.50
1914.....	656,385	8,615	665,000	32,000	5.06
1915.....	686,980	9,020	696,000	31,000	4.67
1916.....	716,590	9,410	726,000	30,000	4.32
1917.....	746,200	9,800	756,000	30,000	4.13

Parallel.

NOTE.—The future sales in Valley Junction are estimated to grow at approximately the same rate per cent as in Des Moines.

742 *Method of Calculating the Gas Consumption by Districts of the Comparative Plant.*

From data of consumption of meters in the three districts in 1910 we have the average sales per meter as follows:

Regular Meters:

District No. 1..... 39,085 cu. ft.
" " 2..... 27,454 " "
" " 3..... 25,451 " "

For pre-payment meters average of entire city..... 18,374 cu. ft.

Table to Determine Relative Sales by Districts—M Cu. Ft.

Regular Meters.

Dist. No.	No. of meters.	Dist. #1.	Dist. #2.	Dist. #3.	Total.
1.....	4,986	194,878	.....	.....	.....
2.....	2,990	.....	82,087	.....	.....
3.....	1,380	.....	.....	35,122	.....
Prepayment Meters.					
1.....	4,515	87,473	.....	.....	.....
2.....	3,259	.....	63,140	.....	.....
3.....	2,773	.....	.....	53,724	.....
Total.....	19,902	282,351	145,227	88,846	516,424
Per Cent Each District to Total..	54.8	28.1		17.1	

NOTE.—These percentages are used throughout the development period.

743 *Estimated Gas Consumption of Comparative Plant by Districts.*

Year.	District number.	Per cent consumption comparative plant.	Consumption of going plant—M cu. ft.	Consumption of comparative plant—M cu. ft.
1913.....	1	36.0	342,390	123,260
"	2	6.75	175,569	11,851
"	3	0.0	106,841	.....
Total.....		.....	624,800	135,111
1914.....	1	82.5	359,699	296,752
"	2	54.0	184,444	99,600
"	3	18.75	112,242	21,045
Total.....		.....	656,385	417,397
1915.....	1	92.5	375,465	348,230
"	2	92.5	193,041	178,563
"	3	82.5	117,474	96,916
Total.....		.....	686,980	623,709
1916.....	1	97.5	392,691	382,874
"	2	97.5	201,362	196,328
"	3	92.5	122,537	113,347
Total.....		.....	716,590	692,549
1917.....	1	100.	408,918	408,918
"	2	100.	209,682	209,682
"	3	97.5	127,600	124,410
Total.....		.....	746,200	743,010

744 *Physical Rate of Installing Meters in Use Expressed in Per Cent.*

	Year.	Jan. 1.	July 1.	Dec. 31.
District No. 1:				
All mains and services laid.....	1912	0	15	60
	1913	60	80	100
Parallel to Going Plant.....	1914	100	100	100
District No. 2:				
All mains and services laid.....	1913	0	30	60
	1914	60	80	100
Parallel to Going Plant.....	1915	100	100	100
District No. 3:				
All mains and services laid.....	1914	0	50	100
Parallel to Going Plant.....	1915	100	100	100

745 *Rate of Consumption of Gas of the Hypothetical Plant at Different Periods of Each Year in Each District as Compared to That of the Going Plant Expressed in Per Cent.*

	Year.	Jan. 1.	July 1.	Dec. 31.
District No. 1:				
Gas on Jan. 1, 1913.....	1913	25	45	75
	1914	75	82½	90
	1915	90	92½	95
	1916	95	97½	100
Parallel to Going Plant.....	1917	100	....	...
District No. 2:				
Gas on Jan. 1, 1913.....	1913	0	22½	75
	1914	75	67½	90
	1915	90	92½	95
	1916	95	97½	100
Parallel to Going Plant.....	1917	100	....	...
District No. 3:				
Gas Already On.....	1914	0	37½	75
	1915	75	82½	90
	1916	90	92½	95
	1917	95	97½	100
Parallel to Going Plant.....	1918	100	....	...

FORMULA.—At beginning and end of each year, multiply above percentages by per cent of meters installed at same time. Add. Divide by 2.

746 *Record of Send Out of Cu. Ft. of Gas—Des Moines Gas Co.*

Year.	Maximum day.	Minimum week.	Yearly send out.
1904	1,227,000	7,700,000	305,327,167
1905	1,362,000	8,915,000	353,611,891
1906	1,685,000	10,369,000	405,778,655
1907	2,012,000	11,494,000	461,809,546
1908	1,935,000	11,989,000	487,578,116
1909	2,019,000	12,790,000	522,325,879
1910	2,228,000	14,030,000	556,117,412

747 *Unaccounted for Gas in Past Years—The Des Moines Gas Company.*

Year.	Send out—Cu. Ft.	Sales—Cu. Ft.	Unaccounted for gas. Cu. Ft.	Unaccounted for gas. per cent.
1904	305,327,167	292,407,382	12,919,785	4.24
1905	353,611,811	334,404,840	19,206,971	5.44
1906	405,778,655	372,101,839	33,676,816	8.33
1907	461,809,546	429,519,162	32,290,384	7.00
1908	487,578,116	461,177,956	26,400,160	5.42
1909	522,325,879	497,244,529	25,081,350	4.82
1910	556,117,412	531,991,054	24,126,358	4.31

748 *Revenue Per Thousand Net—Des Moines Only.*

Based on 1910 results.

Total revenue Des Moines per M	$1.0587
Less Discount " "	.0519
Net Revenue	1.0068

NOTE.—Include miscellaneous sales at $0.0005 per M sold (Sep. Col.).

749 *Estimate of Future Taxes for Going Value Calculation.*

For 1911:

Assessment	$1,350,000
Property Tax—2¼% of $1,350,000	$30,375
Gross Income Tax—2% of $562,748 (gas sales)	11,255
" " " —2% of 279.34 (Mis. ")	5.59
Fed. Corp. Tax 1% on $84,523—$5000	795.29
Total	42,431

For 1912:

Assessment—$1,500,000 @ 2¼%	33,750
Gross Income—596,553 @ 2%	11,931
Federal Tax	824
	46,505

For 1913:

Assessment—$1,500,000 @ 2¼%	33,750
Gross Income—629,361 @ 2%	12,587
Federal Tax	874
	47,211

For 1914:

Assessment—1,500,000 @ 2¼%	33,750
Gross Income—661,196 @ 2%	13,223
Federal Tax	984
	47,957

For 1915:

Assessment—1,500,000 @ 2¼%	33,750
Gross Income—691,996 @ 2%	13,840
Federal Tax	1,084
	48,674

750 **For 1916:**

Assessment—$2,500,000	$56,250
Gross Income—721,821	14,436
Federal Tax	959
	71,645

For 1917:

Assessment—$2,500,000	56,250
Gross Income—751,647 @ 2%	15,033
Federal Tax	1,059
	72,342

751 *Comparative Plant Taxes.*

1911.			None.
1912.			None.
1913.	See p. 26		$20,925
1914.	See p. 26		42,359
1915.	Assessment, 1,500,000 @ 2¼%	33,750	
	Gross Revenue, 628,262 @ 2%	12,565	
	Federal Tax	577	
			46,892
1916.	Assessment, 2,500,000 @ 2¼%	58,250	
	Gross Revenue, 697,604 @ 2%	13,952	
	Federal Tax	671	
			70,873
1917.	Assessment, 2,500,000 @ 2¼%	56,250	
	Gross Revenue, 748,434 @ 2%	14,969	
	Federal Tax	976	
			72,195

Classification	Reproduction value.	Composite life.	Straight line basis.	Depreciation per year. 4% sinking fund basis.	Depreciation per year. With varied rate of interest.
Plant Buildings	$86,924	45.5	$1,910	$701	$919
Contents of Bldgs	190,880	30.7	6,218	3,272	3,716
Outside Apparatus, etc	325,871	44.6	7,307	2,744	3,572
Gen'l Office and Stable Equipment	45,549	28.6	1,593	880	952
Street Mains and Paving	1,297,323	58.1	22,329	5,920	8,517
River Pipes	49,500	50.0	990	324	439
Services and Paving	375,453	20.0	18,773	12,608	13,276
Meters	264,307	25.0*n*	10,572	6,346	6,786
Distribution Tools	6,660	10.0	660	556	556
Total	2,642,467	....	76,352	33,359	38,733

Depreciation per year on the sinking fund basis was computed from the following formula:

$$\text{Depreciation per year} = \frac{r}{(1+r)^n - 1} \times \text{Remaining year.}$$

Where n = Remaining life.
and r = rate of interest.

THIS PAGE BOUND

753 *Future Depreciation on Sinking Fund Basis, with Varied Rates of Interest.*

Classification.	Reproduction new value.	Life yrs.	Sinking fund rate.	Depreciation per year.
Plant Buildings	$86,924	45.5	3%	919
Contents of Bldgs	190,880	30.7	3¾%	3,716
Outside Apparatus, etc	325,871	44.6	3%	3,572
Gen'l Office and Stable Equipment	45,549	28.6	3½%	952
Street Mains and Paving	1,297,323	58.1	3%	8,517
River Pipes	49,500	50.0	3%	439
Services and Paving	375,453	20.0	3½%	13,276
Meters	264,307	25.0	3½%	6,786
Distribution Tools	6,660	10.0	4%	556
Total	2,642,467	....	....	38,733

(Here follow pasters, marked pages 754-758.)

CHARTS

TOO

LARGE

FOR

FILMING

759 William W. Randolph, M. E. City Investing Building, 165 Broadway, New York.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

Copy.

COMPLAINANT'S EXHIBIT 22.

J. P. B.

Appraisal of the Property of the Des Moines Gas Company as of December 31, 1910, by Wm. W. Randolph.

760 Summary and Totals.

	Estimated cost new.	Estimated physical decay.
Buildings—Page 5—this appraisal..	93,960.00	8,282.00
Machinery—Page 12—this appraisal	534,058.00	84,810.00
Distribution System—Page 13—this Appraisal.....	1,892,496.00	189,249.00
Land Value.....	240,000.00	.....
Working Capital.....	160,000.00	.....
Cost to develop Gas Sales from Zero over 510,000,000 cu. ft. per year..	500,000.00	.....
	$3,420,514.00	$282,331.00

NOTE.—The following page and sketch reference are to pages (Exhibit 15) and sketches (Exhibit 16) found in Complainants' Exhibits 15 and 16.

Buildings:

	Estimated cost new.	Estimated physical decay.
Purifier House..... 101′ 4″ x 30′ 9″ x 27′ 0″ high basement floor to truss chord with elevator shaft addition; brick walls, roof monitor type slate on wood on wood trusses. (Papes 16 to 24 Inclusive—Sketches 4 to 8 Inclusive—Buildings A and B.)	$10,500.00	$600.00
Fire Brick Shed (lean to)..... 12′ 0″ x 19′ 0″ x 12′ 0″ high at back and 8′ 0″ high at front; sides and roof corrugated iron on steel framing. (Pages 26 and 27—Sketch 9—Building C.)	120.00	12.00
Meter, Governor, Exhauster, and Wash Rooms..... 98′ 6″ x 29′ 4″ x 23′ 4″ high basement floor to truss chord; brick walls, gable roof slate on wood on wood trusses. (Pages 28 to 39 Inclusive—Sketches 11 to 18 Inclusive—Buildings A, B, C & D.)	9,552.00	660.00
Retort, Generator, Engine & Blower Rooms..... 84′ 1″ x 32′ 0″ x 19′ 6″ high floor to truss chord with wing 13′ 0″ x 28′ 8″ x 14′ 0″ high at front and 16′ 6″ high at back; brick walls, roof main building monitor type corrugated iron on steel on steel trusses, roof of wing corrugated iron on pipe frame with wood rafters. (Pages 43 to 51 Inclusive—Sketches 19 to 24 Inclusive.)	6,480.00	1,860.00
Coal Shed, Scrubber and Condenser Rooms..... 83′ 11″ x 19′ 3″ x average height of 19′ 0″ floor to rafters; brick walls, shed roof corrugated iron on wood on wood rafters. (Pages 53 to 57 Incl.—Sketches 25 to 27 Incl.)	2,820.00	504.00

Buildings—(Continued):

	Estimated cost new.	Estimated physical decay.
Boiler & Engine Rooms..... 77′ 11″ x 36′ 4″ x boiler room 18′ 0″ high and engine room 22′ 6″ high floor to truss chord brick walls, gable roof monitor type part slate on steel on steel trusses and part corrugated iron on steel on steel trusses. (Pages 59 to 65 Inclusive—Sketches 28 to 31 Inclusive.)	$8,628.00	$408.00
Boiler House Extension..... 30′ 0″ x 17′ 4″ x 16′ 0″ average height; wall part brick and part corrugated iron on steel framing; shed roof corrugated iron on steel on steel rafters. (Pages 68 to 72 Inclusive—Sketch 33.)	1,560.00	.....
Generator House..... 60′ 0″ x 63′ 0″ x 28′ 9″ high floor to truss chord; walls part brick and part corrugated iron on wood studding; roof monitor type part slate on steel on steel trusses and part corrugated iron on steel on steel trusses. (Pages 74 to 82 Incl.—Sketches 35 to 37 Incl.)	16,368.00	.....
Coal Shed..... 75′ 0″ x 75′ 0″ x 21′ 6″ high at low side and 27′ 6″ high at high side; brick and frame construction, roof tar felt and gravel on wood. (Pages 84 to 86 Incl.—Sketch 39.)	10,056.00	600.00
Runway for Coal Shed..... Siding and roof corrugated iron on wood framing. (Pages 88 to 90 Incl. Sketch 40.)	420.00	36.00
Smith, Carpenter Shop & Store Room 109′ 7″ x 58′ 10″ x 16′ 8″ high basement floor to truss chord in store room & 13′ 7″ high floor to truss chord in carpenter shop; brick walls, gable roof part tin on wood on wood trusses and part tar felt on wood on wood trusses. (Pages 92 to 102—Sketches 41 to 44 inclusive.)	12,744.00	1,274.00

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Buildings—(Continued):

	Estimated cost new.	Estimated physical decay.
Smith, Carpenter Shop & Store Room—(Cont'd):		
Barrel Oil Store House..... 16′ 0″ x 11′ 0″ x 7′ 4″ high on low side and 8′ 6″ high on high side; walls and roof reinforced concrete. (Page 104—Sketch 45.)	$660.00	.....
Pump House..... 22′ 0″ x 14′ 0″ x 8′ 6″ high floor to eaves brick walls, reinforced concrete roof covered with slag. (Pages 107 to 110 Inclusive—Sketch 46.)	1,020.00	.....
Oil Pump House..... 12′ 9″ x 9′ 6″ x 10′ 0″ high floor to roof on high side; brick walls, shed roof, slate on pipe purlins. (Page 112—Sketch 47.)	300.00	.....
Meter House..... 28′ 8″ x 20′ 8″ x 20′ 0″ high ground level to eaves; brick walls, roof reinforced concrete covered with tar and gravel. (Pages 116 to 119 Inclusive—Sketch 48.)	2,064.00	.....
Stable ..... 102′ 6″ x 33′ 0″ one part and 22′ 3″ the other part x 9′ 0″ high to eaves one part and 14′ 0″ high other part. Frame construction; gable roof part shingles on wood on wood framing and part rubberoid on wood on wood framing. (Pages 121 to — Inclusive—Sketches 51 to 52.)	2,844.00	1,140.00
Boiler House..... 40′ 4″ x 14′ 4″ x 12′ 1″ high ground to eaves. Sides and roof corrugated iron on steel framing. (Pages 126 to 128 inclusive—Sketch 53.)	1,548.00	84.00

Buildings—(Continued):

	Estimated cost new.	Estimated physical decay.
Fire Brick Store House..... 24′ 4″ x 16′ 3″ x 7′ 6″ high on low end and 8′ 6″ high on high end; sides and roof tar felt on wood framing. (Pages 130 and 131—Sketch 55.)	$132.00	$12.00
Fire Hose House..... 7′ 3″ x 6° 4″ x 5′ 2″ high to eaves, frame construction, roof tar felt on wood. (Pages 132 and 133—Sketch 60.)	60.00	.....
Coke Shed..... 49′ 9″ x 25′ 0″ x 14′ 3″ high to eaves extension 22′ 0″ x 12′ 0″ wide; frame construction, gable roof shingles on wood on wood framing. (Pages 134 and 135. Sketch 65.)	1,200.00	600.00
Coke Rack..... 74′ 9″ x 52′ 0″ wide frame enclosure. (Pages 154 and 155. Sketch 66.)	192.00	24.00
Oil Barrel Store House..... 20′ 0″ x 10′ 0″ x 6′ 6″ high on low side and 7′ 9″ high on high side floor to eaves; frame construction, shed roof tar felt on wood. (Pages 195 and 196. Sketch 122.)	156.00	.....
Yard Paving: (Pages 164 & 165, Sketch 67).....	2,568.00	264.00
Fences: Pages 166 & 167—Sketch 68).....	1,968.00	204.00
Total buildings.....	$93,960.00	$8,282.00

765 *Appraisal of Des Moines Gas Company.*

	Estimated cost new.	Estimated physical decay.
Machinery:		
Boilers:		
2—125 H. P. Phœnix horizontal tubular boilers with steel stack 34″ dia. x 80′ 0″ high, including foundations. (Page 66.)	$4,800.00	$960.00
1—125 H. P. Murray horizontal tubular boilers with steel stack 34″ dia. x 80′ 0″ high, including foundations. (Pages 66 and 67.)	2,700.00	480.00
1—125 H. P. Phœnix horizontal tubular boiler with steel stack 34″ dia. x 80′ 0″ high, including foundations. (Page 73.)	2,700.00	300.00
1—60 H. P. Phœnix horizontal tubular boiler with steel stack 27″ dia. x 80′ 0″ high, including foundations. (Page 129.)	1,500.00	180.00
Coal Gas Benches:		
5—Benches of six's including foundations. (Page 52.)	20,640.00	20,640.00
Condensers:		
2—8′ 6″ dia. x 22′ 0″ condensers with 20″ connections, including foundations. (Page 66.)	6,840.00	600.00
Conveying Machinery:		
1—Bucket oxide conveyor including one 5 H. P. engine, housing, etc. (Page 25.)	1,320.00	300.00
1—Charging coke buggy capacity 500 lbs. (Page 52.)	120.00	.....
Industrial track switch, turn table and charging cars. (Page 58.)	780.00	72.00
8—McNeill charging barrows. (Page 83.)	960.00	120.00
1—Derrick, stiff leg type, consisting of mast, boom, bracing, hand winch, cable, shieves and guy wires and foundations. (Page 162.)	264.00	24.00

	Estimated cost new.	Estimated physical decay.
Machinery—(Continued):		
Electric Wiring:		
Electric Wiring in Meter House, Boiler House Stable, Purifying House, Meter Exhauster and Pump House, Condenser House and Generator House. (Page 188.)	$420.00	$60.00
Elevators:		
1—Steam hydraulic elevator with 8′ 0″ x 8′ 0″ platform, in purifier house. (Page 25.)	1,200.00	120.00
1—Steam hydraulic elevator in Generator House. (Page 52.)	960.00	480.00
1—Steam Hydraulic elevator in runway for coal shed. (Page 91.)	1,200.00	250.00
Engines:		
1—8″ x 10″—40 H. P. Payne horizontal engine. 1—6″ x 8″—15 H. P. Payne horizontal engine. Foundations, counter shafting and belting. (Page 52.)	1,350.00	300.00
2—10″ x 10″—55 H. P. American Ball engines including foundations and belting. (Page 66.)	2,640.00	240.00
1—5″ x 6″—5 H. P. Payne horizontal engine. (Page 103.)	210.00	36.00
Exhausters & Blowers:		
1—# 8 Wilbraham Green exhauster and one 10″ x 12″ New York Safety vertical engine, including foundations. (Page 42.)	1,620.00	.....
2—# 7 Root's exhausters and two 40 H. P. New York Safety vertical engines, including foundations. (Page 42.)	3,420.00	360.00
2—# 5 Wilbraham Green high pressure pushers and two New York Safety engines 40 H. P. each, including foundations. (Page 42.)	2,640.00	120.00

	Estimated cost new.	Estimated physical decay.
Machinery—(Continued):		
Exhausters & Blowers—(Continued):		
2—# 6 Sturtevant blowers and foundations. (Page 52.)	$420.00	$36.00
2—# 8 Extra heavy Sturtevant blowers with beds and foundations. (Page 66.)	1,080.00	60.00
1—# 8 Sturtevant blower and one 98 H. P. C-3 turbine, including foundations. (Page 83.)	2,040.00	.....
Fire Apparatus:		
Fire extinguishers, pails, hose and nozzles, etc. (Page 190.)	210.00	30.00
Furniture:		
Furniture and fixtures in West Side office and Meter and Fitting Shop. (Pages 239 to 243 Inclusive.)	15,000.00	1,200.00
Guages and Thermometers:		
Miscellaneous guages and theremometers. (Page 157.)	300.00	30.00
Governors:		
1—16″ Connelly automatic governor with 24″ connections. (Page 41.)	720.00	.....
1—24″ Connelly automatic governor with 24″ connections. (Page 42.)	1,800.00	.....
Holders:		
1—2 lift relief holder, capacity 175,000 cu. ft. in brick tank. (Page 138.)	39,600.00	7,200.00
1—2 lift storage holder, capacity 309,432 cu. ft. in brick tank. (Page 140.)	55,200.00	6,000.00
1—3 lift storage holder, capacity 1,132,000 cu. ft. in steel tank with brick retaining wall. (Page 142.)	135,600.00	9,600.00
Laboratory Apparatus:		
Miscellaneous Laboratory apparatus. (Page 41.)	$840.00	$120.00
Meter Provers:		
2—Meter provers and outfit for dipping meters. (Page 194.)	390.00	.....

Machinery—(Continued):

	Estimated cost new.	Estimated physical decay.
Oil Filter:		
1—20 gallon Cross oil filter. (Page 66.)	72.00	.....
Oil Unloading Device:		
Oil unloading device. (Page 184.)	180.00	.....
Photometers:		
1—60″ Goodwin bar photometer.		
1—American Meter Co. bar photometer.		
2—Pentane lamps. (Page 41.)		
Yard Connections:		
Gas Mains in building. (Pages 25, 42, 66 and 120.)	7,440.00	
Gas Mains in yard. (Pages 185, 6 and 187)	30,000.00	4,320.00
Miscellaneous piping. Pages 168 to 183.)	6,000.00	
Pumps:		
1—Hand drip Pump. Page 41.		
1—10″ x 6″ x 10″ Warren Duplex. (Page 41.)		
1—7½″ x 5″ x 8″ Buffalo Duplex. (Page 41.)		
1—Vertical pump. (Page 41.)		
1—9″ x 5¼″ x 12″ Davidson simplex. (P. 67.)		
1—6″ x 7″ x 10″ Davidson simplex. (Page 111.)		
1—6″ x 7″ x 10″ Davidson simplex. (Page 111.)		
1—4½″ x 3¼ x 6″ Davidson simples. (Page 111.)	3,120.00	360.00
1—4″ x 5″ x 8″ Davidson simplex. (Page 111.)		
1—5¼″ x 3½″ x 5″ Warren duplex. (Page 111.)		
1—4½″ x 3¼″ x 6″ Davidson Simplex. (Page 111.)		
1—3½″ x 2½″ x 4″ Davidson Simplex. (Page 111.)		
1—6″ x 7″ x 10″ Davidson Simplex. (Page 111.)		
1—6″ x 8″ x 12″ Davidson. (Page 115.)		
1—2″ x 2½″ x 4″ Davidson simples. Page 163.) Including foundations.		

Machinery—(Continued):

	Estimated cost new.	Estimated physical decay.
Purifiers:		
4 boxes 20′ 0″ x 20′ 0″ x 7′ 0″ including center seal, hoist and foundations. (Page 25.)	$21,600.00	$600.00
Pyrometers:		
1—Bristol electric pyrometer. (Page 83.)	288.00	30.00
1—Rubbish kiln for cremating rubbish. (Page 199.)	36.00	12.00
Scales:		
1—Fairbanks scales 100 lbs. capacity. (P. 83.)		
1—Fairbanks standard scales 400 lbs. cap. P. 83.		
1—Fairbanks standard platform scales—platform 6′ 0″ x 4′ 11″—(Page 87.)	1,920.00	1,380.00
1—Wagon scales capacity 2 tons—platform 8′ 0″ x 14′ 0″. (Page 163.)		
1—Track scales, capacity 100 tons—platform 7′ 6″ x 36′ 0″. (Page 163.)		
Station Meters:		
1—8′ 0″ x 8′ 0″ Goodwin with Hinman drum, including foundations. (Page 41.)	3,576.00	390.00
1—8′ 0″ x 7′ 6″ American Meter Co., with Hinman drum, including foundations. (Page 41.)	3,336.00	330.00
1—14′ 0″ x 14′ 0″ American Meter Co., with Hinman drum, including foundations. (Page 120.)	9,888.00	.....
Tanks and Wells:		
1—30′ 0″ dia. x 20′ 0″ high oil tank, including foundations (Page 143.)	8,040.00	480.00
1—28′ 0″ dia. x 14′ 0″ high oil tank, including foundations. (Page 145.)	4,680.000	240.00
1—16′ 6″ dia. x 10′ 0″ high tar tank. (Page 147.)	1,920.00	960.00

	Estimated cost new.	Estimated physical decay.
Machinery—(Continued):		
Tanks and Wells—(Continued):		
2—45′ 0″ dia. x 27′ 0″ high oil tanks including foundations. (Page 150.)	$22,800.00	$.....
1—3′ 4″ dia. x 10′ 9″ long oil tank including foundations. (Page 152.)	168.00	48.00
1—9′ 0″ dia. x 20′ 0″ high holder oil tank, including foundations. (Page 197.)	720.00	360.00
Miscellaneous valve and junction boxes, sewer manholes, tar separators, water, tar and blow-off wells, etc. (Page 158.)	3,000.00	300.00
1—Pipe coating tank. (Page 201 & 202.)	120.00	12.00
Tar Extractors:		
1—P. & A.. 3′ 6″ dia. x 6′ 11″ including foundations. (Page 42.)	1,200.00	120.00
Toilet Accommodations:		
Toilet accommodations in Wash Room—(Pages 41 and 42)	600.00	120.00
Tools:		
Machine, Blacksmith and Carpenter Shop tools. (Page 42 and 103.)	1,344.00	1,800.00
Miscellaneous Work tools. (Pages 245 to 250 Inclusive.)	1,200.00	
Distribution tools. (Pages 253 to 265 Incl.)	6,216.00	
Water Gas Apparatus:		
2—6′ sets of Water Gas Apparatus to outlet of condensers, including foundations. (Page 52.)	16,800.00	15,600.00
2—8′ 6″ sets of Water Gas Apparatus to outlet of scrubbers, including foundations. (Page 83.)	29,760.00	1,200.00
1—10′ 6″ set of Water Gas Apparatus to outlet of washer, including foundations. (Page 83.)	21,360.00	

771 *Appraisal of Des Moines Gas Company.*

	Estimated cost new.	Estimated physical decay.
Machinery—(Continued):		
Water Heaters:		
1—Feed Water Heater. (Page 67.)	$480.00	$420.00
Stable Equipment:		
Horses, wagons, harness, automobiles, motor cycles, etc. (Page 265.)	13,630.00	5,590.00
Total machinery	$534,058.00	84,710.00

772 *Appraisal of Des Moines Gas Company.*

		Estimated cost new.	Estimated physical decay.
Distribution System:			
Mains (Pages 209 to 216 Inclusive):			
Size.	No. of feet.	Amount.	Amount
2½" and under	33,947	$17,873.00	
3"	35,301	42,237.00	
4"	573,734	544,073.00	
6"	162,004	207,502.00	
8"	65,607	121,476.00	
10"	32,008	66,094.00	
12"	31,349	75,883.00	
14"	622	1,493.00	
16"	28,506	105,427.00	
20"	6,036	28,633.00	
24"	1,819	16,921.00	
Total mains		$1,227,612.00	
House Services (Pages 220 to 225 Inclusive):			
17,170 Services Nov. 1, 1910		393,647.00	
Lamp Services & Posts (Page 218):			
1,140 Services Nov. 1, 1910		23,256.00	
Meters in Use (Page 227):			
19,742 Meters Nov. 1, 1910		240,057.00	
Meters in Stock (Page 228):			
853 Meters Nov. 1, 1910		7,924.00	
Total distribution system		$1,892,496.00	$189,249.

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COMPLAINANT'S EX. 23.

J. P. B.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

Report on Financial Conditions of the Des Moines Gas Company, Des Moines, Iowa, December 31, 1910, by William J. Hagenah.

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CHICAGO, ILLINOIS, *March* 8, 1911.

Des Moines Gas Company, Des Moines, Iowa.

DEAR SIRS: Pursuant to your instructions I have made an audit and analysis of your books and financial records covering, for the plant account, the period from 1886 to 1910 and the profit and loss accounts over the three twelve months' periods ending September 30, 1908, September 30, 1909, and September 30 1910, these being the periods embraced in the exhibits submitted to the court in the legal proceedings now pending for the determination of a reasonable rate to be charged by your company for gas, and also covering the calendar year ending December 31, 1910, together with the preparation of a statement of assets and liabilities as of that date.

The schedules and exhibits are as follows:

Schedule I. Statement of Assets and Liabilities, December 31, 1910.

Exhibit A. Plant Investment less Working Capital.
" B. Additions to Plant, 1886–1910, and Opening Balance Sheet.
" C. Inventories.
" D. Accounts Receivable.
" E. Cash.
" F. Capital Stock.
" G. Bonds.
" H. Preferred Stock Contracts.
" I. Accrued Accounts.
" J. Profit and Loss, December 31, 1910.
" K. Statement of Revenue from Gas and Sundry Sales and Cost of Manufacturing Materials and Supplies.

Schedule II. Statement of Profit and Loss, Twelve Months Ending Sept. 30, 1909.

Exhibit A. Statement of Revenue from Gas and Sundry Sales and Cost of Manufacturing Materials and Supplies.

Schedule III. Statement of Profit and Loss, Twelve Months Ending Sept. 30, 1909.

Exhibit A. Statement of Revenue from Gas and Sundry Sales and Cost of Manufacturing Materials and Supplies.

Schedule IV. Statement of Profit and Loss, Twelve Months Ending Sept. 30, 1910.

Exhibit A. Statement of Revenue from Gas and Sundry Sales and Cost of Manufacturing Materials and Supplies.

Schedule V. Statement of Gross Revenue and Net Income as per Company's Books and as Corrected, for Years Ending Sept. 30, 1908; Sept. 30, 1909; Sept. 30, 1910, and Dec. 31, 1910.

775 SCHEDULE I.

Statement of Assets and Liabilities, Dec. 31, 1910.

Exhibits.	Assets.		
A & B.	Plant	$3,853,975.22	
C.	Inventories	77,410.46	
D.	Accounts Receivable	53,627.46	
	Unearned Insurance	905.20	
E.	Cash	49,434.15	
	Total		$4,035,352.49
	Liabilities.		
F.	Capital Stock	$2,250,000.00	
G.	Bonds	1,097,000.00	
H.	Preferred Stock Contracts	411,000.00	
	Bills Payable	14,000.00	
	Accounts Payable	39,607.29	
I.	Accrued Accounts	58,817.07	
J.	Profit and Loss	164,928.13	
	Total		$4,035,352.49

776 SCHEDULE 1.—EXHIBIT A.

Plant Investment and Opening Balance Sheet, March 1, 1906.

Plant Investment.

Property Purchased March 1, 1906		$3,592,723.24
Capital Expenditures from March 1, 1906, to December 31, 1910, as follows:		
Extension and Improvements	$97,254.70	
Street Main Extensions	242,686.12	
Services	72,493.28	
Meters	68,364.93	
Street Lamp Extension	2,039.65	
Real Estate	5,699.26	
Plant	36,822.82	
		525,360.76
Total		4,118,084.00
Less Amount Credited to Plant Account June 30, 1909, and Charged to Profit and Loss Account		264,108.78
Investment December 31, 1910, as per Company's Books		3,853,975.22

Opening Balance Sheet, March 1, 1906.

Assets.

Property Purchased	$3,592,723.24	
Inventory Accounts	128,790.72	
Accounts Receivable	41,593.18	
Bills Receivable	356.25	
Advance Accounts	993.38	
Cash	10,788.24	
Total Assets		3,775,245.01

Liabilities.

Capital Stock	2,250,000.00	
Bonds Payable	685,000.00	
Preferred Stock Contracts	800,000.00	
Accounts Payable	19,229.16	
Accrued Accounts	21,015.85	
Total Liabilities		3,775,245.01

SCHEDULE 1.—EXHIBIT B.

Additions to Plant, 1886–1910.

Period.	Extension & improvement.	Street lamp extension.	Extension of street mains.	Meters.	Services.	Totals.
Capital City Gas Light Company:						
Capital Expend. to June 30, 1886	189,423.33	11,135.03	62,618.82	83,248.80	18,957.10	295,383.08
12 Months ending June 30, 1887	559.05	635.10	9,733.61	107.69	2,358.07	13,393.52
" " " " " 1888	28,642.43	.....	541.57	23.25	1,380.84	30,588.09
" " " " " 1889	1,483.65	1,214.97	9,171.79	2,864.93	2,601.08	11,606.56
6 " " Dec. 31, 1889	181.44	2,719.80	3,550.27	158.79	852.22	7,462.52
12 " " " " 1890	19,000.75	529.79	9,672.08	1,579.13	1,783.49	32,565.24
" " " " " 1891	61,892.14	374.14	3,192.26	809.47	2,134.35	68,402.36
" " " " " 1892	588.20	880.90	2,847.37	1,964.68	2,272.07	5,615.02
" " " " " 1893	606.92	416.86	2,842.35	576.18	1,548.68	5,157.27
" " " " " 1894	2,991.08	465.20	443.93	1,246.11	1,616.92	149.32
" " " " " 1895	759.53	73.72	3,819.39	1,907.67	2,364.04	8,924.35
" " " " " 1896	6,683.28	2,253.99	23,139.46	3,633.28	6,878.75	42,588.76
" " " " " 1897	28,008.89	1,097.51	20,124.25	5,008.82	6,901.35	61,140.82
" " " " " 1898	3,998.85	757.70	12,967.43	5,705.91	7,715.55	31,145.44
" " " " " 1899	8,815.99	184.45	13,917.29	12,762.77	10,897.10	46,577.60
" " " " " 1900	1,066.01	313.91	7,934.00	8,244.95	16,944.01	34,502.88
" " " " " 1901	38,935.60	1,190.81	38,824.34	9,917.55	23,339.32	112,207.62
" " " " " 1902	11,427.19	702.11	40,871.36	8,266.88	17,842.59	56,255.75
" " " " " 1903	5,779.93	35.91	51,024.09	17,205.25	23,045.18	85,530.50
" " " " " 1904	1,853.21	54.43	23,998.35	5,221.91	14,913.00	45,932.04
" " " " " 1905	8,450.51	1,805.52	65,473.12	20,530.80	19,306.48	115,566.43
2 " " Feb. 28, 1906	2,028.50	88.71	357.41	4,136.04	648.70	7,259.36
Des Moines Gas Company:						
12 Months ending Feb. 28, 1907	289,943.78	1,587.60	87,672.28	24,972.51	14,738.11	418,914.28
" " " " " 1908	32,781.82	144.31	52,716.86	12,457.74	12,537.90	110,638.63
" " " " " 1909	13,881.29	268.61	21,273.23	5,858.42	12,636.45	53,918.00
10 " " Dec. 31, 1909	44,699.80	39.13	30,816.97	12,361.21	14,001.87	101,918.98
12 " " " " 1910	43,470.09	.....	50,206.78	12,715.05	18,578.95	124,970.87
Totals	806,380.46	25,335.43	649,750.66	187,755.93	258,794.17	1,928,016.65

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SCHEDULE 1.—EXHIBIT C.

Inventories

Store Room	$40,251.89	
Tar	1,235.34	
Gas Stock	811.44	
Boiler Fuel Stock	737.95	
Generator Fuel Stock	10,449.98	
Gas Coal Stock	1,222.16	
Oil (Water Gas) Stock	9,301.80	
Purification Supply Stock	4,113.30	
Stable Supplies	5,805.40	
Gas Arc Lamps	3,481.20	
Total		$77,410.46

SCHEDULE 1.—EXHIBIT D.

Accounts Receivable.

Gas Sales—From Users of Gas	$34,092.34	
Sundry Sales—Appliances, Fittings, Mdse., etc.	17,851.80	
City of Des Moines	126.40	
Sundry Debtors—Other than Gas Appliance Sales	1,556.92	
Total		$53,627.46

SCHEDULE 1.—EXHIBIT E.

Cash.

Represents Cash in Bank and Working Funds	$49,434.15

SCHEDULE 1.—EXHIBIT F.

Capital Stock.

Authorized and Issued 22,500 Shares @ $100 par		$2,250,000.00
Issued as follows:		
1906.		
Mar. 1. For Cash (10 shares @ $100)	1,000.00	
Mar. 1. In part payment for the entire plants, property, real and personal, business, rights, privileges and franchises of Capital City Gas Light Company, a Company operating in Des Moines, Iowa, and Jansen Haines and W. B. Keffer individuals, operating in Valley Junction, Iowa—22,490 shares @ $100	$2,249,000.00	
Total		$2,250,000.00

779 SCHEDULE 1.—EXHIBIT G.

Bonds.

Authorized	$1,500,000.00
Unissued	403,000.00
Issued	1,097,000.00

Name of Bond: First Mortgage 5% Twenty Year Gold Bonds.
Dated: March 1st, 1906.
Maturity: March 1st, 1926.
Interest Rate: 5%.
Interest Payable: September and March 1st.
Where Payable: Commercial Trust Company, Philadelphia.
Trustee: Commercial Trust Company.
Callable: On any interest date @ 105 and accrued Interest.
Provisions for Bonding Betterments: 100%.
Sinking Fund Provisions: None.
How Issued: (See following pages.)

NOTE: Underlying Bonds of Capital City Gas Light Company, amounting to $400,000 were retired January 1st, 1907, and bonds of Des Moines Gas Company issued in their stead, as provided for in Article I, Section 2, of Mortgage dated March 1st, 1906.

780 *Analysis of Bond Account.*

Date.	Covering		Amount.
1906.			
Mar. 1.	In part payment for the entire plants, property, real and personal, business, rights privileges and franchises of the Capital City Gas Light Company, a Company operating in Des Moines Iowa, and Jansen Haines and W. B. Keffer, individuals, operating in Valley Junction.....		$285,000.00
Oct. 31.	Issued in accordance with Resolutions of Board of Directors, at meeting held August 15th, 1906, and Article 1, Section 3 of Mortgage dated March 1, 1906, for additions, etc., to plant—Bonds Nos. 286 to 343, inclusive.....		58,000.00
	Extensions and Improvements at Works	757.64	
	Street Lamp Extension.....	676.93	
	Extension of Street Mains.....	38,627.63	
	Meters	11,877.92	
	Services	6,790.65	
	Total.....	58,730.77	
Dec. 31.	Issued in accordance with Resolutions of Board of Directors, at meeting held December 26, 1906, and Article 1, Section 2 of Mortgage dated March 1st, 1906. Bonds Nos. 344 to 743 inclusive, to retire bonds outstanding of the Capital City Gas Light Company, due January 1, 1907, to the amount of $400,000.....		400,000.00
1907.			
Apr. 30.	Issued in Accordance with Resolutions of Board of Directors at meeting held March 20, 1907, and Article 1, Section 3 of Mortgage dated March 1, 1906; bonds Nos. 744 to 814, inclusive, for additions, etc., to plant, as follows.....		71,000.00
	Extensions and Improvements at Works.....	4,644.30	
	Street Lamp Extension.....	1,511.59	
	Extension of Street Mains.....	84,209.66	
	Meters	24,674.84	
	Services	14,241.72	
	Total.....	129,282.11	
	Less amount of bonds heretofore issued on account of same...	58,000.00	
	Total.....	71,282.11	
	Forward.....		**$814,000.00**

781 *Analysis of Bond Account*—(Continued).

Date.	Covering		Amount.
1907.	Forward		$814,000.00
Oct. 31.	Issued in accordance with resolutions of Board of Directors, at meeting held March 20, 1907, and Article 1, Section 3 of Mortgage dated March 1, 1906; bonds Nos. 815 to 852, inclusive, for additions, etc., to plant as follows		38,000.00
	Extensions and Improvements at Works	14,880.31	
	Street Lamp Extension	1,685.02	
	Extension of Street Mains	103,153.27	
	Meters	26,780.93	
	Services	20,976.85	
	Total	167,476.38	
	Less amount heretofore issued on account of same	129,000.00	
		38,476.38	
1908.			
Mar. 31.	Issued in accordance with resolutions of Board of Directors, at meeting held February 19th, 1908, and Article 1, Section 3 of Mortgage dated March 1, 1906, bonds 853 to 906, inclusive, for additions to plant, etc., as follows		54,000.00
	Extensions and Improvements at Works	20,669.92	
	Street Lamp Extension	1,709.51	
	Extension of Street Mains	135,816.53	
	Meters	36,919.27	
	Services	26,565.18	
	Total	221,680.41	
	Less amount of bonds heretofore issued on account of same	167,000.00	
	Total	54,680.41	
Sep. 30.	Issued in accordance with resolutions of Board of Directors, at meeting held August 19, 1908, and Article 1, Section 3 of Mortgage dated March 1, 1906; bonds 907 to 924, inclusive, for additions to plant, etc., as follows		18,000.00
	Extension- and Improvement- at Works	21,582.07	
	Street Lamp Extension	1,731.91	

Extension of Street Mains	146,728.40	
Meters	37,789.04	
Services	31,222.00	
Total	239,053.42	
Less amount of bonds heretofore issued on account of same	221,000.00	
Total	18,053.42	
Forward		$924,000.00

782 *Analysis of Bond Account*—(Continued).

Date.	Covering		Amount.
1909.	Forward		$924,000.00
Mar. 31.	Issued in accordance with resolutions of Board of Directors, at meeting held February 10,1909, and Article 1, Section 3, of mortgage dated March 1, 1906; bonds Nos. 925 to 952, inclusive, for additions to plant, etc., as follows		28,000.00
	Extension- and Improvement-at Works	25,291.23	
	Street Lamp Extension	1,894.02	
	Extension of Street Mains	162,273.87	
	Meters	38,716.53	
	Services	39,155.20	
	Total	267,330.85	
	Less amount of bonds heretofore issued on account of same	239,000.00	
	Total	26,330.85	
Oct. 31.	Issued in accordance with resolutions of Board of Directors at meeting held October 20, 1909, and Article 1, Section 3, of Mortgage dated March 1, 1906; bonds Nos. 953 to 1016 inclusive, for additions to plant, etc., as follows		64,000.00
	Extension- and Improvement-at Works	46,860.34	
	Street Lamp Extension	2,039.65	
	Extension of Street Mains	181,655.43	
	Meters	51,237.10	
	Services	49,389.51	
	Total	331,182.03	
	Less amount of bonds heretofore issued on account of same	267,000.00	
	Total	**64,182.03**	

1910.			
Apr. 30.	Issued in accordance with resolutions of Board of Directors at meeting held March 28, 1910, and Article 1, Section 3, of Mortagage dated March 1, 1906; bonds Nos. 1017 to 1048, inclusive, for additions to plant, etc., as follows		32,000.00
	Real Estate	438.61	
	Extension- and Improvement- at Works	59,045.26	
	Street Lamp Extension	2,039.65	
	Extension of Street Mains	192,479.34	
	Meters	55,649.88	
	Services	53,914.33	
	Total	363,567.07	
	Less amount of bonds heretofore issued on account of same	331,000.00	
	Total	32,567.07	
	Forward		$1,048,000.00

783 *Analysis of Bond Account*—(Continued).

Date.	Covering		Amount.
1910.	Forward		$1,048,000.00
Aug. 31.	Issued in accordance with resolutions of Board of Directors at meeting held August 15, 1910, and Article 1, Section 3 of Mortgage dated March 1st, 1906; bonds Nos. 1049 to 1097, inclusive, for additions to plant, etc., as follows		49,000.00
	Real Estate	472.11	
	Extension - and Improvement- at Works	79,562.53	
	Street Lamp Extension	2,039.65	
	Extension of Street Mains	207,821.78	
	Meters	60,420.07	
	Services	62,388.37	
	Total	412,704.51	
	Less amount of bonds heretofore issued on account of same	363,000.00	
		49,704.51	
	Total		$1,097,000.00

784 SCHEDULE 1.—EXHIBIT H.

Preferred Stock Contracts, September 30, 1910.

1906.
Mar. 1. In part payment for the entire plants, property, real and personal, business, rights, privileges and franchises of Capital City Gas Light Co., a Company operating in Des Moines, Iowa, and Jansen Haines and W. B. Keffer, individuals, operating in Valley Junction, Iowa..... $800,000.00

(8000 shares par $100—$800,000 bearing interest at the rate of 6% per annum, payable September 15th, and March 15th, in each year, commencing March 1, 1906.)

1908.
Jun. 30. Treasurer's Cash Account..... $108,000.00

For amount paid pursuant to resolutions adopted by the Board of Directors at meeting held May 20, 1908, on surrender for cancellation of Preferred Stock Contracts representing 13½% of the total outstanding amount thereof or 1080 shares, viz:

Cont. 1—12½% 1000 shares..... $100,000
Cont. 9—1% 80 shares, 8,000

Par $100—1080 shares, $108,000

1909.
Mar. 31. Treasurer's Cash Account..... 103,800.00

For amount paid pursuant to resolution adopted by Board of Directors at meeting held February 10, 1909, on surrender for cancellation of Preferred Stock Contracts representing 15% of the total outstanding amount thereof, or 1038 shares, viz:

Cont. 11—1000 shares. $100,000
Cont. 19— 38 shares. 3,800

Par $100—1038 shares, $103,800

Oct. 31.	Treasurer's Cash Account.....	114,110.80	
	For amount paid pursuant to resolutions adopted by Board of Directors at meeting held Oct. 20, 1909, on surrender for cancellation of Preferred Stock Contract, representing 19 4/10% of total outstanding amount thereof, $588,200 or $114,110.80.		
1910.			
Sep. 30.	Treasurer's Cash Account.....	63,089.20	
	For amount paid pursuant to resolutions adopted by Board of Directors at meeting held Aug. 15, 1910, on surrender for cancellation of Preferred Stock Contracts, representing 13.307453% of the total outstanding amount thereof, viz: $474,089.20 or $63,089.20.		
	Totals.....	389,000.00	
	Balance September 30, 1910....	411,000.00	
	Totals.....	$800,000.00	$800,000.00

785 SCHEDULE 1.—EXHIBIT I.

Accrued Accounts.

Accrued Taxes.....	$26,643.49	
Accrued Special Taxes.....	5,250.25	
Accrued Interest on Bonds.....	18,283.33	
Accrued Interest on Floating Debt.....	420.00	
Accrued Interest on Preferred Stock Contracts.....	8,220.00	
Total.....		$58,817.07

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SCHEDULE 1.—EXHIBIT J.

Statement of Profit and Loss, Twelve Months Ending December 31, 1910.

Gross Revenue from Sales of Gas (531,991,054 cubic feet)		538,893.00
Operating Expenditures:		
Manufacturing:		
Manufacturing	3,718.76	
Boiler Fuel	15,988.99	
Expense Works	7,611.67	
Generator Fuel	57,297.79	
Manufacturing Labor	10,682.68	
Oil	63,949.96	
Purification Labor	511.88	
Purification Supplies	737.83	
Repairs Works	14,193.78	
Water Tax	1,006.12	
	175,699.46	
Residuals	10,233.02	
Total Manufacturing		165,466.44
Distribution:		
Distribution	3,803.38	
Complaint Expense	3,372.94	
Distribution Office Expense	6,066.58	
Gratuitous Work	6,643.77	
Repairs Mains	9,347.30	
Repairs Services	5,224.76	
Repairs Meters	5,211.63	
Setting & Removing Meters	5,387.46	
Street Mains Abandoned	129.20	
Total Distribution		45,187.02
Commercial Expense:		
Commercial Expense	1,890.01	
Expense Collection	6,374.63	
Expense Office	15,177.30	
Office Salaries	24,509.10	
Total Commercial Expense		47,951.04
New Business:		
New Business	3,154.58	
Advertising	6,853.03	
Appliance Demonstrations	1,711.85	
Expense Soliciting	9,646.65	
Gas Appliances	2,188.14	
Gas Engine Expense	60.02	
House Fitting Expense	178.77	
Gas Arc Rental and Maintenance	5,005.86	
Gas Stove Depreciation	108.15	
Total New Business		24,173.23

Expenses:		
Accidents and Damages	2,616.71	
Association Meetings	1,164.92	
Expense General	1,488.08	
Expense Extraordinary	3,964.78	
Insurance	1,841.95	
Interest	75.05	
Litigation	999.96	
Salaries General	10,000.00	
Uncollectible Bills	3,329.34	
Replacement Values	.....	
Rate Regulation Expense	5,602.00	
Street Lamp Operating	618.35	
Total Expense	31,551.04	
Taxes	38,580.81	
Total Operating Expenditures		352,909.58
Net Earnings		185,983.42
Miscellaneous Sales		437.04
Gross Corporate Income		186,420.46
Deductions from Gross Corporate Income—Fixed Charges		80,014.10
Net Profit per Books		106,406.36
Add Balance January 1, 1910		58,521.77
Balance December 31, 1910		164,928.13

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787 SCHEDULE 1.—EXHIBIT K.

Statement of Revenue from Gas and Sundry Sales and Cost of Manufacturing Materials and Supplies, Year Ending Dec. 31, 1910.

Revenue.	Cubic feet.	Amount.
Gas Sales:		
Des Moines:		
General Consumers (regular)	308,594,800	$339,454.28
General Consumers (prepayment)	204,330,000	204,330.00
Street Lamps	8,561,554	8,561.57
Company	3,615,600	3,615.60
Total Des Moines	525,101,954	555,961.45
Valley Junction:		
General Consumers (regular)	2,453,700	3,925.92
General Consumers (prepayment)	4,435,400	6,653.10
Total Valley Junction	6,889,100	10,579.02
Total Des Moines and Valley Junction	531,991,054	566,540.47
Less Discount		27,647.47
Total Revenue from Gas		538,893.00

Sundry Sales:	
Gas Appliances:	
Sales for Year	34,122.30
Cost of Appliances and Expense Connecting	31,934.16
Net Profit	2,188.14
House Fitting:	
Sales for Year	23,980.87
Cost of Material and Labor	23,802.10
Net Profit	178.77
Merchandise Sales:	
Sales for Year	2,596.19
Cost of Material	2,159.15
Net Profit	437.04

Cost of Manufacturing Materials and Supplies.

Accounts.	Quantity.	Rate.	Amount.
Boiler Fuel:			
Coal, Tons	6,371	$2.50926	$15,988.99
Tar, Gals	.....	.....	.....
Total			$15,988.99
Generator Fuel, Tons	8,760	6.541	57,297.79
Oil, Gals	2,264,891	.028235	63,949.96
Purification Supplies, Bu	4,000	.18445	737.83

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SCHEDULE II.

Statement of Profit and Loss, Twelve Months Ending September 30, 1908.

Gross Revenue from Sales of Gas (451,962,495 C. F.)		457,105.95
Operating Expenditures:		
Manufacturing:		
Manufacturing	2,473.12	
Boiler Fuel	10,019.91	
Expense Works	5,317.97	
Generator Fuel	53,951.81	
Manufacturing Labor	8,772.99	
Oil	83,967.52	
Purification Labor	401.49	
Purification Supplies	246.39	
Repairs Works	6,748.07	
Water Tax	972.49	
	172,871.76	
Residuals	3,646.16	
Total Manufacturing		169,225.60

Distribution:			
Distribution	2,603.63		
Complaint Expense	1,995.93		
Distribution Office Expense	2,977.58		
Gratuitous Work	2,322.33		
Repairs Mains	3,828.48		
Repairs Services	529.84		
Repairs Meters	5,598.40		
Setting and Removing Meters	5,110.67		
Street Mains Abandoned	83.60		
Total Distribution		25,050.46	
Commercial Expense:			
Commercial Expense	1,390.17		
Expense Collection	4,344.95		
Expense Office	8,645.22		
Office Salaries	19,671.20		
Total Commercial Expense		34,051.54	
New Business:			
New Business	1,389.99		
Advertising	4,191.99		
Appliance Demonstrations	1,298.44		
Expense Soliciting	4,293.97		
Gas Appliances	19.96		
Gas Engine Expense	181.72		
Housefitting Expense	2,527.29		
Gas Arc Rental & Maintenance	1,467.38		
Total New Business		15,370.74	
Expense:			
Accidents and Damages	494.24		
Association Meetings	580.17		
Expense General	1,324.85		
Expense Extraordinary	1,749.52		
Insurance	1,938.84		
Interest	168.18		
Litigation	325.00		
Uncollectible Bills	2,117.53		
Street Lamp Operating	276.62		
Total Expense		8,638.59	
Taxes		29,276.55	
Total Operating Expenditures			281,613.48
Net Earnings			175,492.47
Miscellaneous Sales			131.99
Gross Corporate Income			175,624.46
Deductions from Gross Corporate Income, Fixed Charges			87,675.49
Net Profits per Books			87,948.97

[Bold-face figures in red ink in copy.]

789 SCHEDULE II.—EXHIBIT A.

Statement of Revenue from Gas and Sundry Sales and Cost of Manufacturing Materials and Supplies, Year Ending Sept. 30, 1908.

Revenue.	Cubic feet.	Amount.
Gas Sales:		
Des Moines:		
General Consumers (regular)	279,792,900	$307,772.19
General Consumers (prepayment)	155,674,100	155,674.10
Street Lamps	8,706,295	8,706.29
Company	2,221,900	1,605.35
Total Des Moines	446,395,195	473,757.93
Valley Junction:		
General Consumers (regular)	2,574,200	4,118.72
General Consumers (prepayment)	2,993,100	4,489.65
Total Valley Junction	5,567,300	8,608.37
Total Des Moines and Valley Junction	451,962,495	482,366.30
Less Discount		25,260.35
Total Revenue from Gas		$457,105.95
Sundry Sales:		
Gas Appliances:		
Sales for Year		$21,901.13
Cost of Appliances and Expense Connecting		21,921.09
Net Loss		19.96
House Fitting:		
Sales for Year		18,671.87
Cost of Material and Labor		21,199.16
Net Loss		2,527.29
Merchandise Sales:		
Sales for Year		1,189.10
Cost of Material		1,057.11
Net Profit		131.99

Cost of Manufacturing Materials and Supplies.

Account.	Quantity.	Rate.	Amount.
Boiler Fuel:			
Coal, Tons	5,321	$1.82198	$9,693.30
Tar, Gals	21,774	.015	326.61
Total			10,019.91
Generator Fuel, Tons	7,482	7.2102	53,951.81
Oil, Gals	1,947,371	.043118	83,967.52
Purification Supplies, Bu	1,300	.1895	246.39

790 SCHEDULE III.

Statement of Profit and Loss, Twelve Months Ending September 30, 1909.

Gross Revenue from Sale of Gas (486,169,525 Cubic Feet)		$491,944.49
Operating Expenditures:		
Manufacturing:		
Manufacturing	3,044.69	
Boiler Fuel	10,869.97	
Expense Works	5,765.39	
Generator Fuel	56,413.18	
Manufacturing Labor	9,520.39	
Oil	65,383.55	
Purification Labor	654.25	
Purification Supplies	1,289.81	
Repairs Works	6,558.02	
Water Tax	1,047.07	
	160,546.32	
Residuals	6,100.21	
Total Manufacturing		154,446.11
Distribution:		
Distribution	3,044.63	
Complaint Expense	2,224.74	
Distribution Office Expense	4,717.00	
Gratuitous Work	1,801.47	
Repairs Mains	4,101.17	
Repairs Services	1,087.65	
Repairs Meters	4,379.65	
Setting & Removing Meters	6,420.28	
Street Mains Abandoned	693.00	
Total Distribution		28,469.59
Commercial Expense:		
Commercial Expense	1,483.80	
Expense Collection	4,445.41	
Expense Office	10,995.17	
Office Salaries	20,801.52	
Total Commercial Expense		37,725.90

New Business:		
New Business	2,398.51	
Advertising	4,142.23	
Appliance Demonstrations	1,611.54	
Expense Soliciting	6,862.90	
Gas Appliances	1,927.26	
Gas Engine Expense	204.71	
Housefitting Expense	382.12	
Gas Arc Rental & Maintenance	3,838.07	
Total New Business		16,748.58
Expense:		
Accidents and Damages	3,990.74	
Association Meetings	1,031.30	
Expense General	1,553.75	
Expense Extraordinary	2,667.19	
Insurance	1,491.49	
Interest	1,054.08	
Litigation	824.97	
Uncollectible Bills	2,824.56	
Street Lamp Operating	181.47	
Total Expense		13,511.39
Taxes		32,437.49
Total Operating Expenditures		283,339.06
Net Earnings		208,605.43
Miscellaneous Sales		95.24
Gross Corporate Income		208,700.67
Deductions from Gross Corporate Income—Fixed Charges		84,439.23
Net Profit per Books		124,261.44

[Bold-face figures in red ink in copy.]

791 SCHEDULE III.—EXHIBIT A.

Statement of Revenue from Gas and Sundry Sales and Cost of Manufacturing Materials and Supplies, Year Ending Sept. 30, 1909.

Revenue.	Cubic feet.	Amount.
Gas Sales:		
Des Moines:		
General Consumers (regular)	290,957,300	$320,053.03
General Consumers (prepayment)	177,523,600	177,523.60
Street Lamps	8,740,525	8,740.49
Company	2,791,300	2,791.30
Total Des Moines	480,012,725	509,108.42

Valley Junction:		
General Consumers (regular).....	2,438,700	3,901.92
General Consumers (prepayment)....	3,718,100	5,577.15
Total Valley Junction.....	6,156,800	9,479.07
Total Des Moines and Valley Junction.....	486,169,525	518,587.49
Less Discount.....		26,643.00
Total Revenue from Gas.....		$491,944.49
Sundry Sales:		
Gas Appliances:		
Sales for Year.....		$26,441.62
Cost of Appliances and Expense Connecting.....		24,514.36
Net Profit.....		1,927.26
House Fitting:		
Sales for Year.....		17,468.24
Cost of Material and Labor.....		17,086.12
Net Profit.....		382.12
Merchandise Sales:		
Sales for Year.....		1,502.09
Cost of Material.....		1,406.85
Net Profit.....		95.24

Cost of Manufacturing Materials and Supplies.

Account.	Quantity.	Rate.	Amount.
Boiler Fuel:			
Coal, Tons.....	6,027	$1.17203	$10,317.04
Tar, Gals.....	36,862	.015	552.93
Total.....			10,869.97
Generator Fuel, Tons.....	8,164	6.9095	56,413.18
Oil, Gals.....	2,104,531	.031067	65,383.55
Purification Supplies, Bu.....	6,900	.1869	1,289.81

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SCHEDULE IV.

Statement of Profit and Loss, Twelve Months Ending September 30, 1910.

Gross Revenue from Sales of Gas (519,763,172 C. F.)		526,293.50
Operating Expenditures:		
Manufacturing:		
Manufacturing	3,986.27	
Boiler Fuel	16,657.04	
Expense Works	8,201.76	
Generator Fuel	57,198.26	
Manufacturing Labor	10,858.84	
Oil	63,260.24	
Purification Labor	488.99	
Purification Supplies	1,511.34	
Repairs Works	14,588.34	
Water Tax	1,038.04	
	177,789.12	
Residuals	7,994.51	
Total Manufacturing		169,794.61
Distribution:		
Distribution	3,877.48	
Complaint Expense	3,434.41	
Distribution Office Expense	6,514.47	
Gratuitous Work	5,655.39	
Repairs Mains	7,581.60	
Repairs Services	3,917.84	
Repairs Meters	5,551.15	
Setting and Removing Meters	5,439.09	
Street Mains Abandoned	288.20	
Total Distribution		42,259.63
Commercial Expense:		
Commercial Expense	1,796.26	
Expense Collection	5,692.99	
Expense Office	14,049.35	
Office Salaries	23,622.36	
Total Commercial Expense		45,160.96
New Business:		
New Business	3,111.00	
Advertising	6,777.15	
Appliance Demonstrations	1,475.00	
Expense Soliciting	9,430.33	
Gas Appliances	1,814.35	
Gas Engine Expense	47.71	
Housefitting Expense	679.11	
Gas Arc Rental & Maintenance	5,406.15	
Total New Business		25,112.10

Expense:		
Accidents and Damages	2,143.93	
Association Meetings	1,367.77	
Expense General	1,257.89	
Expense Extraordinary	4,258.69	
Insurance	2,025.74	
Interest	154.20	
Litigation	1,000.71	
Salaries General	9,166.66	
Uncollectible Bills	3,068.16	
Replacement Values	348.18	
Street Lamp Operating	604.86	
Total Expense	25,088.39	
Taxes	37,866.74	
Total Operating Expenditures		345,282.43
Net Earnings		181,011.07
Miscellaneous Sales		371.49
Gross Corporate Income		181,382.56
Deductions from Gross Corporate Income—Fixed Charges		79,981.07
Net Profit per Books		101,401.49

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793 SCHEDULE IV.—EXHIBIT A.

Statement of Revenue from Gas and Sundry Sales and Cost of Manufacturing Materials and Supplies, Year Ending Sept. 30, 1910.

Revenue.	Cubic feet.	Amount.
Gas Sales:		
Des Moines:		
General Consumers (regular)	303,620,000	$333,980.85
General Consumers (prepayment)	197,300,200	197,300.20
Street Lamps	8,508,172	8,508.18
Company	3,605,700	3,605.70
Total Des Moines	513,034,072	543,394.93
Valley Junction:		
General Consumers (regular)	2,516,300	4,026.08
General Consumers (prepayment)	4,212,800	6,319.20
Total Valley Junction	6,729,100	10,345.28
Total Des Moines and Valley Junction	519,763,172	553,740.21
Less Discount		27,446.71
Total Revenue from Gas		526,293.50

Sundry Sales:

Gas Appliances:	
Sales for Year	31,744.31
Cost of Appliances and Expense Connecting	29,929.96
Net Profit	1,814.35
House Fitting:	
Sales for Year	21,210.31
Cost of Material and Labor	21,889.42
Net Loss	679.11
Merchandise Sales:	
Sales for Year	2,613.35
Cost of Material	2,241.86
Net Profit	371.49

Cost of Manufacturing Materials and Supplies.

Account.	Quantity.	Rate.	Amount.
Boiler Fuel:			
Coal, Tons	6,465	$2.5763	$16,657.04
Tar, Gals	.....	.....	.....
Total			16,657.04
Generator Fuel, Tons	8,654	6.6088	57,198.26
Oil, Gals	2,250,940	.028355	63,260.24
Purification Supplies, Bu	8,250	.18319	1,511.34

Gross Revenue and Net Income as per Company's Books and as Corrected for Years Ending Sept. 30, 1908, 1909, 1910, *and Dec.* 31, 1910.

	Company books.	Adjustments. Debit.	Adjustments. Credit.	Actual surplus.
Year Ending Sept. 30, 1908:				
Gross Revenue	$457,237.94	.....	.....	$457,237.94
Operating Expenses	281,613.48	$40,320.00	$135.07	321,798.41
Net Earnings	175,624.46	40,320.00	135.07	135,439.53
Fixed Charges	87,675.49	.....	.....	87,675.49
Net Income	87,948.97	40,320.00	135.07	47,764.04
Year Ending Sept. 30, 1909:				
Gross Revenue	492,039.73	.....	.....	492,039.73
Operating Expenses	283,339.06	41,668.00	1,957.34	323,049.72
Net Earnings	208,700.67	41,668.00	1,957.34	168,990.01
Fixed Charges	84,439.23	.....	.....	84,439.23
Net Income	124,261.44	41,668.00	1,957.34	84,550.78
Year Ending Sept. 30, 1910:				
Gross Revenue	526,664.99	.....	.....	526,664.99
Operating Expenses	345,282.43	47,198.00	7,351.92	385,128.51
Net Earnings	181,382.56	47,198.00	7,351.92	141,536.48

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Fixed Charges	79,981.07	.....	.....	79,981.07
Net Income	101,401.49	47,198.00	7,351.92	61,555.41
Year Ending Dec. 31, 1910:				
Gross Revenue	539,330.04	.....	.....	539,330.04
Operating Expenses	352,909.58	47,198.00	7,351.92	392,755.66
Net Earnings	186,420.46	47,198.00	7,351.92	146,574.38
Fixed Charges	80,014.10	.....	.....	80,014.10
Net Income	106,406.36	47,198.00	7,351.92	66,560.28

795 *Analysis of Accounts.*

Methods Pursued.

Before engaging in any work of checking your accounts and records a study was made of the classification of accounts adopted by your company, and upon which distribution charges is based. The classification used in your business is that prescribed by the American Gas Light Association in 1902 and was compared with the classification prescribed by the Public Service Commission of New York and the Railroad Commission of Wisconsin. While the number of accounts and certain distributions in your classification do not follow the method pursued in those states where a uniform classification is prescribed by state authorities, the difference consists principally in the method of grouping in order to ascertain departmental costs. Your classification does not direct any charges into the operating expenses or the construction account which would not meet with the sanction of the states of Wisconsin and New York.

A study was made of the forms and blanks used in the conduct of your business, both at the office of the company in Des Moines and for the transaction of business between your Company and the controlling company, the United Gas Improvement Company of Philadelphia. The system followed commends itself because of its simplicity and thoroughness and the checks which it affords as against any irregularity It is impossible for the Des Moines office to incur any expenditure for the purchase of materials and supplies in excess of $50.00 without written authority being obtained from the Board of Directors. This method of supervision and audit insures accuracy in details, economy and rigid responsibility. The authorizations were examined and checked with the books covering the five year period from 1906 to 1910, inclusive. Owing to the fact that the ledger accounts are not closed until all steps under the author-
796 ity are completed the analysis of the authorities permits of a separation between maintenance, replacements and capital expenditures.

In the course of the audit all the vouchers covering the periods embraced in the three twelve months statements ending September 30, 1908, 1909 and 1910, and also the calendar year 1910, were thoroughly examined and found to be properly recorded on your books. The vouchers were numbered consecutively for each year and invoices and other evidences of purchase were found attached. There were no missing vouchers. Under your system every voucher is checked at the Des Moines office and should any clerical errors escape detection there they are found in the periodical inspection and audit made at the direction of the Board of Directors. The construction account was analyzed from 1886 to 1910, inclusive, there being no records available to show transactions prior to 1886. Each charge to construction during these years was examined and traced through the various books of record until it was closed into the plant account.

Profit and Loss Accounts.

In the analysis of your statements of operating expenses several matters presented themselves which affect the final profit and loss and therefore call for special mention. These conditions serve in part to show a more favorable financial condition of the Company and in other respects show that the profit indicated in the profit and loss statements is not actual because not all the operating expenses properly chargeable to the years in question have been met.

The financial position of the company is strengthened because of its affiliation with the United Gas Improvement Company of Philadelphia. This company supplies the Des Moines Gas Company with services of a very substantial character. These services consist of administrative, financial and engineering skill to the full requirements of the company. The United Gas Improvement Com-
797 pany maintains expensive accounting, legal and engineering stations, equipped to solve all the problems with which the subsidiary companies are confronted and through this relationship such controlled companies are furnished with services and facilities of a character which their own size and financial condition would, in most instances, make it impossible to obtain. The purchasing agent of the parent company also acts as a purchasing agent for the controlled companies and by virtue of his position as such agent for a large number of corporations and his close contact with the market he is enabled to purchase most favorably. The prices paid are the same as those charged to subsidiary companies and are therefore much less than the prices such companies would be compelled to pay if acting independently in the open market. In all purchases of large quantities of supplies, such as coal, gas pipe, stoves, meters, etc., the purchasing agent of the parent company purchases for all the controlled properties at one time and thus secures very favorable prices, delivery being made directly to the several companies.

An examination of the vouchers and authorizations of your company shows that it has benefitted very materially by such purchases. When it is considered that the accounts of the company have been charged with costs based upon such favorable conditions of purchase the benefit resulting to the construction account and to the operating accounts is apparent. For these services your company has until recently paid no compensation, except several small payments incurred for drafting services on particular assignments. During the last year, however, your company has paid for these services at the rate of $10,000 per year. Through the payment of this charge your company is spared the expense of maintaining a large engineering department and increasing its office staff for executive, accounting and auditing purposes. It also continues to receive substantial bene-
fits in the purchase of all its supplies. Considering the size
798 of your company, and also the current administrative and technical service which is furnished, the payment above referred to cannot be regarded as unreasonable. The value of the service furnished could not be duplicated by your Company for the same money. The relationship governing the payment of such

services is in line with established practice, but is considerable less than the charges exacted for similar work in other industries. Such relationships are mutually beneficial. The only danger is the liability to abuse the power, and such payments should always call for the closest scrutiny. There is no evidence in this case of the abuse of such power, since the charge made is from all points of consideration a reasonable one and beneficial to the company.

Construction Account.

The analysis of the construction account reveals that you have not charged that account with all the expenses with which it should properly be charged. The account as at present carried on your books shows but little more than the actual cost of the labor and material expended for construction purposes, leaving each year a considerable amount of overhead charges to be included in operating expenses. Such overhead charges embrace expenditures for engineering and supervision during construction, interest, insurance and taxes during construction, salaries of general officers during construction, etc. Much engineering work has been done in connection with construction for which the company has never been charged at all. In many instances regular employees of the company have been employed on construction work, but in the distribution of the pay roll and expense vouchers no proper proportion has been charged against the plant. Interest on money borrowed for construction purposes has been included in current expenses. The result of this practice is that the value accruing to the property because of these expenditures is in the physical property, but through such charges having been made to operating expenses the construction account
799 now does not show the actual cost of the additions to plant.

Depreciation.

Your records further show that the property is not being adequately protected against depreciation. As a general rule public service corporations have not made sufficient provisions for depreciation. No proper distinction has been made between current maintenance and replacements. In some utility fields, and doubtless such is true in this case, the necessity for making proper provision for depreciation has not been fully understood, so that the insufficient charges for this purpose may be attributed to a lack of proper statistical data rather than to a studied effort to avoid it Whatever may have been the attitude of the company towards this subject in the past it is necessary that proper adjustment be made at this time, when the reasonableness of the present rate schedule is under determination, in order to insure the protection of the interests of both the stockholder and the customer for service.

In the past years property replacements have been charged directly to appropriate maintenance accounts, thus increasing the expenditure of maintenance, but providing only for the current replacements for the year in question. In charging no more than this your company has made no provision for depreciation on all the property

of the plant which it is necessary to replace at the end of its life in service. In other words, the company has provided for only the current replacements without provision for obsolescence and inadequacy, both forces which materially reduce the value of the property and unless provided for through the gradual building up of a reserve for that purpose, result in the impairment of the investment. The policy pursued by your company will eventually lead to impairment unless the depreciation is increased to an amount equal to that which experience shows is necessary. Not to recognize this condition and to fail to create a reserve covering also the obsolescence and inadequacy of the plant due to invention and municipal growth,
800 but to consider as profit the net earnings from which no deductions for these purposes have been made, is a delusion which time will certainly reveal.

The subject of depreciation is closely connected with maintenance and is often confused with it. In a general sense maintenance embraces depreciation. Maintenance may be said to consist of both current repairs and depreciation, and doubtless it is in this sense that the terms have been used by your company. Used as a term for repairs in its proper definition maintenance means the "up keep" of the property as distinguished from its "use" in operation and should be considered to cover the expenditures for current or ordinary repairs, renewals or replacements of property resulting through wear and tear or other casualties which are incidental to the nature of the operation, and which expenditures are necessary in order to keep up the productive capacity of the plant to its original or equivalent state of efficiency. When, however, through wear and tear, inadequacy, obsolescence, supersession, or public requirements, the unit of equipment becomes economically irreparable, the uncurrent or extraordinary repairs, renewals, or replacements made necessary should be charged to a depreciation reserve accumulated for this purpose through charges to operating expenses.

Depreciation can be provided for in another manner, which is to credit the construction account and charge surplus at stated intervals with an amount representing the estimated depreciation during the year, or so much thereof as the finances of the company will permit. By this method the plant account will be reduced on account of the declining efficiency of the various units in service and will be charged again when such units are replaced. This method defeats the primary function of bookkeeping, which is to show at all times what the plant has cost. Under the former method this can be seen by referring to the construction account in the general ledger,
801 the estimated depreciation and the provisions made therefor being shown by the depreciation reserve balance.

A third method of accounting for depreciation consists in charging all replacements to the appropriate maintenance account, or distributing them over a group of maintenance accounts, thus merging such charges with those of current "Up keep." This method destroys all possibility of determining the amount expended on current "up keep" and the amount spent on replacements, and since it deals only

with actual expenditures, takes no cognizance of the much wider influence and expense of depreciation.

You inform me that the composite life of the plant and the actual annual depreciation requirement would be computed by your engineers. In the absence of other findings at this time I refer to the generally accepted depreciation rate of 3 per cent per year on gas plant and use this rate in my deductions. This figure is the result of many actual tests and the use of it here will probably lead to no material error. When your engineers have computed the proper rate under the conditions affecting your plant such rate can easily be substituted for the one in question.

Assuming 3 per cent per year to be the proper rate, this amount applied on the depreciable property of the plant represents the proper annual charge against earnings to take care of the depreciation of the property. In this instance the company has been meeting these current replacements by charges to maintenance. From an analysis of the maintenance accounts for each period, schedules and exhibits herewith presented, it appears that the following items have been incorrectly charged as current maintenance and which are either depreciation, replacements or capital charges.

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Year.	Replacements in maintenance.	Capital charges in maintenance.	Total deductions.
Sept. 30th, 1908.....	4.57	130.50	135.07
Sept. 30th, 1909.....	1,282.24	675.10	1,957.34
Sept. 30th, 1910.....	6,087.17	1,264.75	7,351.92
Dec. 31st, 1910.....	6,087.17	1,264.75	7,351.92

The amount spent for replacements as shown above applies only to the actual expenditures without provision for obsolescence and inadequacy. The amount is also small because owing to the rapid growth of your city and the expansion of your plant, units of large capacity have been installed. This results in a lower expenditure for replacements because the large units have a longer life in service and because with the large additions during the last ten years the composite age of the plant is comparatively low. The replacement expenditures now being made, therefore, really date back to the plant of the size of twenty-five or thirty years ago. They do not recognize that each unit, even though rendering sufficient service, has depreciated considerably below the basis of the 100 per cent represented by this cost.

The depreciation rate to be used here applies only on the depreciable property. This amount is equal to the value of the total property less the land and working capital, with adjustments where possible for salvage value. The value of the depreciable property each year for the purpose of this analysis has been determined by taking the cost of the property in 1886, less land and working capital, and adding thereto for each year the additions of depreciable property.

In order to show the actual net earnings each year as opposed to the apparent net earnings now shown by your books I have prepared

a schedule showing the condensed profit and loss accounts for the years covered, crediting the operating expenses with the amounts not properly chargeable there and charging operating expenses with a depreciation allowance of 2½ per cent on the depreciable property. The rate here used is very conservative when it is considered that the depreciable property is carried forward at its cost price, whereas the present value of the property must be used in determining
803 the reasonableness of a rate for service and since the depreciation rate is much lower than that generally used for gas plants, which is approximately 3 per cent. The rate here used is practically equal to a rate computed on the so called sinking fund plan. Even though your engineers found that a somewhat higher rate is necessary, this computation will still serve to show the effect on your net earnings of properly caring for depreciation. It will be observed that the actual net earnings compare with the book net earnings as follows:

	Net earnings per books.	Actual net earnings after depreciation.
Yr. ending Sept. 30, 1908.....	$175,624.46	$135,439.53
Yr. ending Sept. 30, 1909.....	208,700.67	168,990.01
Yr. ending Sept. 30, 1910.....	181,382.56	141,536.48
Yr. ending Dec. 31, 1910.....	186,420.46	146,574.38

Value of Investment.

In the foregoing tables and discussions material has been presented to show the cost of the plant to the stockholders, the revenue from the operation of the plant and the cost of such operation, together with the net earnings from operation. The investment of the stockholder, however, is more than the mere bare cost of the physical plant. He is entitled to a reasonable return on all the money which he has reasonably, legitimately and honestly invested in the business, and this includes the involuntary investment necessary to conduct the business, as well as the voluntary investment. To arrive at this valuation it is not enough to consider the cost of the plant alone. Such valuation must be arrived at from a consideration of all the elements making for value, of which the principal ones are the original cost of the plant, its reproduction cost new, its reproduction cost new less depreciation, the value of its established business, the amount of stock and bonds outstanding against the property and its earning capacity. No formula or mathematical rule can be blindly followed, but from all the facts and elements of value it is
804 necessary to apply a reasonable judgment in order that substantial justice may be secured as between the public and the stockholder.

The amount shown by the construction account does not necessarily represent the value of your investment, even excluding the question of unearned increment. Your records do not show the cost of building up your business and making it a live, active, producing and profit-yielding organization. A gas works complete in all its physical requirements and standing ready to serve the public is not

a going business until by one method or another, all of which call for investment, it has induced a sufficient number of customers to take advantage of its service which will produce sufficient revenue to meet the operating expenses, depreciation and a reasonable return on the investment. Without an established going business the plant is a dead mass of iron, steel, brick and lumber, regardless of its state of physical perfection.

New plants seldom yield a return on the investment during the first year of operation. In fact it is more likely to require a number of years of continuous effort to establish a business on a firm foundation, while the history of the gas industry clearly shows that many of such plants have not reached a position of profit to the investor until very many years after their construction. An examination of your records bearing on this subject shows that for various reasons the plant has not yet reached the stage of development which justifies the investors in the belief that the property would yield them a reasonable average annual return.

The Des Moines Gas Company was organized under the laws of the State of Iowa on February 28, 1906. The Company's corporate existence dates from March 1, 1906, and continues for a term of twenty years, with a right of renewal or dissolution as provided by the statutes of your state. The company was incorporated to own property and maintain gas plants in the city of Des Moines, Iowa, and in any other place or places in the State of Iowa,
805 and to do all such acts as may be necessary for the operation and maintenance of a company in the gas business.

Under date of March 1, 1906, your Company acquired by purchase the entire plant, property, real and personal, business, rights, privileges and franchises of the Capital City Gas Light Company, then operating in Des Moines, Iowa, and also acquired by purchase the entire property, real and personal, business, rights, privileges and franchises of certain individuals operating in the town of Valley Junction, Iowa. The records showing the construction of your plant and the cost of operating such plant, together with its earnings for the period from 1886 were submitted and analyzed for the determination of your investment value.

During this period the rates charged for gas in the City of Des Moines have been frequently changed. Prior to January 1, 1896, the price of gas for all purposes was $1.80 per thousand cu. ft., gross, with a discount of 10¢ per thousand cu. ft. for illuminating gas and a discount on fuel gas to the amount of 30¢ per thousand cu. ft. on consumption exceeding 10,000 cu. ft. per month, and a discount of 55¢ per thousand cu. ft. on all consumption in excess of 10,000 cu. ft.

By City Ordinance passed February 7, 1896, the price of gas for all purposes was fixed as follows:

1896 to 1897.....	$1.40	gross	with	10¢	discount	per	m.	c. f.
1898 to 1899.....	1.35	"	"	"	"	"	"	"
1900 to 1901.....	1.30	"	"	"	"	"	"	"
1902, 1903, 1904.....	1.25	"	"	"	"	"	"	"
1905.....	1.20	"	"	"	"	"	"	"
1906 to 1910 incl.....	1.10	"	"	"	"	"	"	"

The rate of $1.10 per thousand cu. ft. with 10¢ per thousand cu. ft. discount is the rate at present in force.

From 1886, at which time the plant represented an investment of less than $300,000, to 1910, regardless of the high rates for gas which were in effect during the earlier years, the plant has not returned to the investor that amount to which he is reasonably entitled. During practically all of this time the gross earnings
806 have not bee- sufficient to pay the operating expenses, depreciation and a reasonable return on the investment. During the earlier years a large amount of money was expended in the development of the business, a practice which is still being pursued. Where a company is in possession of adequate capital expenditures of this character can be made without serious loss to the stockholders, but where, as is almost universally the case, the business is developed out of the earnings at the expense of interest and dividend payments on the investment, a deficit will result. When the company is earning less than its operating expenses it is absolutely necessary that the stockholders make further payments for development purposes. Where a small surplus is earned such amount may be used for development purposes, but it is at the expense of the stockholders' rights, unless such development expenditures are recognized in the capital. If the development cost is not met out of the earnings it must be met directly by the sale of securities, which become a liability against the plant.

The amount by which the earnings fail to meet the operating expenses and the return on the stockholders' investment creates deficits which constitute the cost of building up the business. Just as supervision, interest and insurance during construction are expenditures to be added to the construction cost of the plant, so the deficit representing the amounts by which the stockholders have failed to receive their reasonable return are costs to be added to the value of the physical plant in order to show the complete investment which has been made in the plant as a live going concern.

The cost of developing the gas business consists of expenditures for advertising, soliciting, demonstrating, the selling of gas appliances at less than cost in order to secure their introduction, free house piping, etc. Concessions in rates may also be made below the actual cost to stimulate a large and general use of gas. Development
807 expenditures may also be incurred because of the failure of the plant to earn even its current operating charges for a year or more when the stockholders must supply additional capital to keep the plant in operation. Such expenditures are additional investments upon which the stockholder is entitled to a return, as well as upon expenditures for physical plant. The cost of securing a paying business can best be computed from the analysis of the deficits over the years of development.

The investor has a right to expect reimbursement for such losses. They are legitimate costs of business. The public has a right to exclude from the valuation of utility properties upon which it is compelled to pay reasonable returns all amounts representing unneces-

reasonable rate today may have been an unreasonably low rate twenty years ago, and conversely, what was a reasonable rate twenty or thirty years ago may be an unreasonably high rate today. An analysis must be based upon conditions which existed at the time under investigation. However, the principal should hold that excessive returns should apply to reduce unavoidable losses in building up the business.

811 This method of arriving at the fair present investment value to be used as the basis of rate adjustments was suggested by the court in the case of Mo., Kas. & Tex. Ry. Co. v. Love (177 Fed. 493, 496, as follows:

"An established railroad system may be worth more than its original cost and more than the mere cost of its physical reproduction. It has passed the initial period of little or no return to its owners which, of greater or less duration, almost always follows construction and is not infrequently marked by default and bankruptcy. The inevitable errors in its building, which finite minds and hands cannot avoid have been measurably corrected, time and effect have produced a commercial adjustment between it and the country it was intended to serve, relations have been established with patrons, and sources of traffic have been opened up and made tributary. In other words, the railroad, unlike one newly constructed, is fully equipped and is doing business as a going concern. It has attained a position after many experiences common to railroad enterprises which entail loss and cost not paid from current earnings, and which correspondingly make for value."

This method has been extensively applied by the Railroad Commission of Wisconsin in the leading utility rate cases which have come before that body. The rule was stated in Hill, et al. v. Antigo Water Company (3 W. R. R. C., 623) as follows:

In other words, the plant was losing money while it developed its business. These losses or deficits had to be met by the owners and may be said to constitute the additional investment necessary to build up the business. These deficits therefore represent the cost of the business in very much the same way as that in which the cost of construction represents the cost of the physical plant. In fact, the one appears to be as legitimate and necessary a part of the cost of the enterprise as a whole as the other, or of that cost upon which a reasonable amount for interest and profits should be earned. This appears to hold at least until the deficits or the investments occasioned by them have been made good and restored to the investors, either through surplus profits or in some other form. Such treatment of the cost of building up the business is equitable as between the investors and the consumers in this case. In the long run such treatment or its equivalent to the investors is also necessary in undertakings of this character in order to obtain the capital that is required.

The same principal was adhered to in re Investigation of Menomonie Light and Traction Company (3 W. R. R. C. 778) and in the

case of City of Madison v. Madison Gas and Electric Company (4 W. R. C., 501).

The logic of this reasoning has recently been approved by the Supreme Court of the State of Oklahoma in the case of the Pioneer Telephone and Telegraph Company v. Westenhaver in the following language:

812 Few industries, if any, * * * can be made selfsustaining from the first day of their operation. The uncontradicted evidence in this case discloses that appellant's plant for the years preceding the first hearing, failed to produce revenue sufficient for operating expenses, current repair, and lay aside an amount for depreciation. During the time of development there is a loss of money actually expended and of dividends upon the property invested. How shall this be taken care of? Must it be borne by the owner of the plant? Or by the initial customers? Or shall it be treated as part of the investment or value of the plant constituting the basis upon which charges shall be made to all customers who receive the benefits from the increased service rendering power of the plant by reason of these expenditures? It seems that the last solution is the logical, just and correct one. If rates were to be charged from the beginning so as to cover these expenditures and earn a dividend from the time the plant is first operated, the rate to the first customers would be in many instances, if not in all, so exhorbitant as to be prohibitive, and would be so at the time when the plant could be of least service to them. On the other hand, the public cannot expect as a business proposition, or demand as a legal right, that this loss shall be borne by him who furnishes the service; for, investors in public service property make such investments for the return they will yield; and if the law required that a portion of the investments shall never yield any return, but shall be a total loss to the investor, capital would unwillingly be placed into such class of investments; but the law in our opinion does not so require. Private property can no more be taken in this method for public use without compensation, than by any other method. When the use of the property and the expenditures made during the non-expense paying and non-dividend paying period of the plant are treated as an element of the value of the property upon which fair returns shall be allowed, then the burden is distributed among those who receive the benefits of the expenditures and the use of the property in its enhanced value.

In order to determine the investment value of your property I have analyzed your construction records and the profit and loss accounts from 1886 to 1910, inclusive. I have prepared a table in which the plant and working capital is entered at the book cost in 1886 and showing the actual additions for each year. Assuming that 8 per cent is a reasonable return, the requirement for this purpose is shown in column 2. Column 3 shows the additions to the physical property and to the working capital and in the following column is shown the annual requirement for earnings on these additions. Since the additions are made in the period covering twelve months the interest rate is applied over only six months, or one half of the time, since very little construction was completed during the

Annual Investment on an 8% Earning Basis—Depreciation 2¾%.

						Value of plant at beginning of year.	8% on value of plant.	Additions to plant including work cap.	8% on additions to plant, inc. work. cap. for 6 mos.	Operating expenses.	Depreciation @ 2¾% on depre'ble prop.	Total.	Gross earnings.	Value of plant at close of yr.
12	Mos.	ending	June	30,	1887...	308,983	24,719	18,894	756	51,753	8,246	413,351	78,793	334,558
"	"	"	"	"	1888...	334,558	26,765	36,088	1,444	50,887	9,087	458,829	74,291	384,538
"	"	"	"	"	1889...	384,538	30,763	17,107	684	45,427	9,407	487,926	70,630	417,296
6	"	"	Dec.	31,	1889. .	417,296	16,692	10,212	204	22,848	4,809	472,061	38,449	433,612
12	"	"	"	"	1890...	433,612	34,689	38,065	1,523	52,293	10,507	570,689	82,069	488,620
"	"	"	"	"	1891...	488,620	39,090	73,902	2,956	55,956	12,388	672,912	79,508	593,404
"	"	"	"	"	1892...	593,404	47,472	11,115	445	64,154	12,543	729,133	79,556	649,577
"	"	"	"	"	1893...	649,577	51,966	10,657	426	63,595	12,685	788,906	81,803	707,103
"	"	"	"	"	1894...	707,103	56,568	5,351	214	52,712	12,680	834,628	88,855	745,773
"	"	"	"	"	1895...	745,773	59,662	14,424	577	63,976	12,930	897,342	95,414	801,487
"	"	"	"	"	1896...	801,487	64,119	48,089	1,924	66,673	14,097	996,389	97,636	898,753
"	"	"	"	"	1897...	898,753	71,900	66,641	2,666	77,881	15,091	1,132,932	109,901	1,023,031
"	"	"	"	"	1898...	1,023,031	82,842	36,645	1,466	80,460	15,948	1,240,392	118,117	1,122,275
"	"	"	"	"	1899...	1,122,275	89,780	52,078	2,083	106,934	17,228	1,390,378	138,521	1,251,857
"	"	"	"	"	1900...	1,251,857	100,149	40,003	1,600	120,118	18,177	1,531,904	173,158	1,358,746
"	"	"	"	"	1901...	1,358,746	108,700	117,708	4,708	135,211	21,249	1,746,322	197,623	1,548,699
"	"	"	"	"	1902...	1,548,699	123,895	61,756	2,470	166,883	22,796	1,926,499	242,610	1,683,889
"	"	"	"	"	1903...	1,683,889	134,711	91,031	3,641	204,314	25,148	2,142,734	289,486	1,853,248
"	"	"	"	"	1904...	1,853,248	148,260	51,432	2,057	212,105	26,411	2,293,513	337,205	1,956,308
"	"	"	"	"	1905...	1,956,308	156,505	121,066	4,843	224,349	29,589	2,492,660	368,840	2,123,820
2	"	"	Feb.	28,	1906...	2,123,820	28,318	8,175	55	43,791	4,964	2,209,123	59,168	2,149,955
12	"	"	"	"	1907...	2,149,955	171,996	424,414	16,977	255,968	41,309	3,060,619	391,006	2,669,613
"	"	"	"	"	1908...	2,669,613	213,569	116,139	4,646	282,802	44,352	3,331,121	446,541	2,884,580
"	"	"	"	"	1909...	2,884,580	230,766	59,418	2,377	277,746	45,835	3,500,722	471,931	3,028,791
10	"	"	Dec.	31,	1909...	3,028,791	201,920	106,499	3,550	252,915	40,520	3,634,195	409,412	3,224,783
12	"	"	"	"	1910...	3,224,783	257,926	130,471	5,219	353,600	51,917	4,023,916	539,330	3,484,586

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816 The above tables show that the deficits from operation when carried forward at a reasonable interest rate have not been reduced by surplus earnings. In fact, the tables show that your company has failed to earn its operating expenses, depreciation and 8 per cent on the investment. Your records are complete and admit of detailed analysis. It is believed that where the records covering the early transactions are available, the investment value should be determined in this manner rather than to base it upon the experience of some other plant in some other city under entirely different conditions. When the early records are not available such investment must be determined from other sources, more particularly on the cost of reproduction basis. This method was not necessary here, so that the tables show actual costs and investments in Des Moines unaffected by conditions making for higher or lower values in other cities.

It is obviously impossible to say with absolute accuracy what the investment valuation amounts to for any plant. The tables are open to argument on the basis that the assumed depreciation rates used are too high or too low. Any reasonable conclusion must be that they are low rather than high. For the purpose of this table the rates used are conservative, especially when it is known that much property has been replaced because of the progress in the art. The tables have been based upon the most complete data available and are constructed along the lines which I have followed in my work with the Wisconsin Railroad Commission on rate adjustment proceedings. In any event, because of the many conditions, the final figure must be analyzed by those best equipped by experience and it would appear from all the facts which can be gathered from your records that an investment valuation of approximately $3,450,000 is correct. This amount, used as the valuation on which the rate of return should be computed, is consistent with sound
817 economics, and is just to the public for whose ultimate benefit the business was conducted through the period of unavoidable losses, and it is just to the investor in that it secures to him a return upon his investment honestly made for the development of the business.

Respectfully submitted,

WILLIAM J. HAGENAH.

(Here follow pasters, marked pages 818-824.)

825 COMPLAINANT'S EXHIBIT #31.

8/8/11. F. C. W.

Des Moines Gas Company.

Working Capital—December 31, 1910.

Materials and Supplies:		
Storeroom	40,251.89	
Tar	1,235.34	
Gas Stock	811.44	
Boiler Fuel Stock	737.95	
Generator Fuel Stock	10,449.98	
Gas Coal Stock	1,222.16	
Oil (W. G.) Stock	9,301.80	
Purification Supplies Stock	4,114.30	
Stable	5,805.40	
Gas Arc Lamps	3,481.20	
		77,410.46
Accounts Receivable:		
Gas Sales	34,092.34	
Sundry Sales	17,851.80	
City of Des Moines	126.40	
Sundry Debtors	1,556.92	
		53,627.46
Cash		49,434.15
Advance Insurance		905.20
Total		181,377.27
Less Accounts Payable		39,607.29
Total		$141,769.98

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk, by Louis J. Adelman, Deputy.

(Here follow pasters, marked pages 826-828.)

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829 COMPLAINANT'S EX. 35.

J. P. B.

Des Moines Gas Company.

Statement of Active Meters in Service.

December 31, 1886, to December 31, 1910.

December 31st: Year.	Meters. Regular.	Prepayment.	Total.	Increase	% of increase.
1886	.....	.....	1,261	.....	.....
1887	.....	.....	1,304	43	3.41
1888	.....	.....	1,321	17	1.30
1889	.....	.....	1,338	17	1.29
1890	.....	.....	1,538	200	14.95
1891	.....	.....	1,720	182	11.83
1892	.....	.....	1,874	154	8.95
1893	.....	.....	2,047	173	9.23
1894	.....	.....	2,225	178	8.69
1895	.....	.....	2,488	263	11.82
1896	.....	.....	2,868	380	15.27
1897	.....	.....	3,479	611	21.30
1898	.....	.....	4,127	648	18.62
1899	.....	.....	5,308	1,181	28.61
1900	.....	.....	6,425	1,117	21.04
1901	.....	.....	7,682	1,257	19.56
1902	.....	.....	8,898	1,216	15.83
1903	.....	.....	10,395	1,497	16.82
1904	.....	.....	11,436	1,041	10.01
1905	8,728	4,212	12,940	1,504	13.15
1906	8,864	5,776	14,640	1,700	13.14
1907	8,758	7,315	16,073	1,433	9.79
1908	8,654	8,446	17,100	1,027	6.39
1909	9,396	9,045	18,439	1,339	7.83
1910	9,246	10,490	19,736	1,297	7.03

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk, by Louis J. Adelman, Deputy.

(Here follows paster, marked page 830.)

831–857 COMPLAINANT'S EX. 69.

J. P. B.

The United Gas Improvement Company.

Synopsis of Transactions.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

Feb. 28, 1907:

Credits.

Expenses, &c., charged by U. G. I. Co.		2,365.1
Repairs, Stores & Auths., &c.....		7,527.0
Interest		453.3
		10,345.4
Cash to meet exceptional a/cs (C. I. Pipe)..		44,000.0
		54,345.4

Debits.

Cash	9,141.14	
Bills payable	44,635.47	
		53,776.6
		568.8

Feb. 29, 1908:

Credits.

Expenses, &c., charged by U. G. I. Co.		1,729.0
Repairs, Stores, & Auths., &c.		667.3
		2,965.2
Cash		3,138.0
Treasurer		8,985.2
		15,088.5

Debits.

Bills Payable	15,000.0
	88.5

Feb. 28, 1909:

Credits.

Expenses, &c., charged by U. G. I. Co.		1,944.7
Repairs, Stores, Auths., &c.....		622.6
		2,656.0

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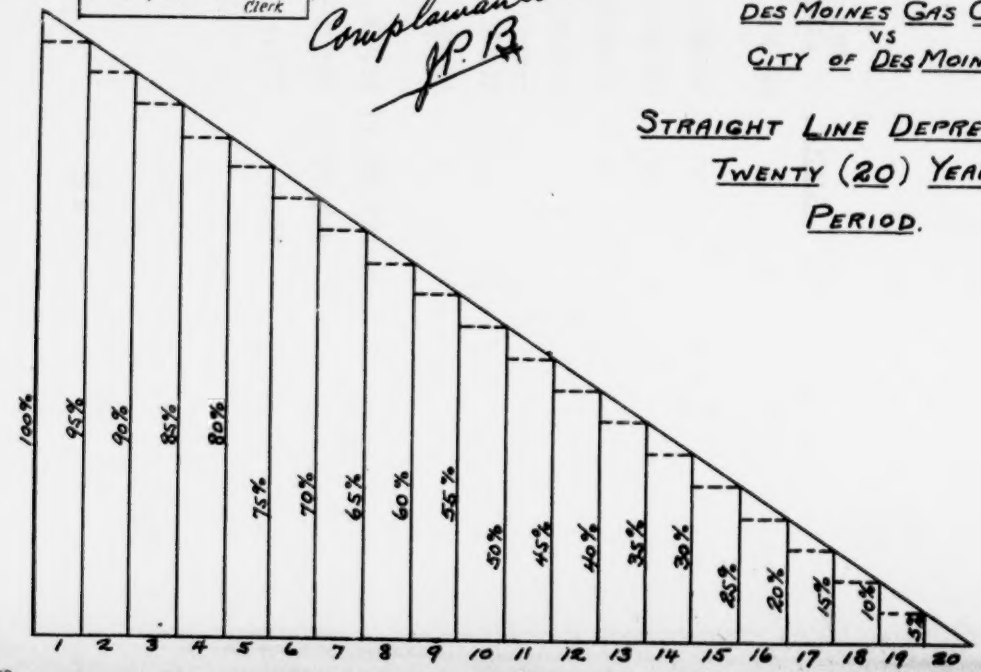
FILED
APR 5 1912
Wm. C. McArthur
Clerk

Complainants Ex 64
J.P.B.

EXHIBIT 64

DES MOINES GAS CO
VS
CITY OF DES MOINES

STRAIGHT LINE DEPRECIATION
TWENTY (20) YEAR
PERIOD.



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Debits.

ash	1,885.63	.....
ccounts Payable	57.20	.....
		1,942.83
		713.18

Dec. 31, 1909:

Credits.

xpenses, &c., charged by U. G. I. Co.	.....	3,344.83
epairs, Stores, Auths., &c.	.....	4,147.39
		8,205.40

Credits.

ash	6,112.77	.....
ccou-ts Payable	33.80	.....
		6,146.57
(Forward)	.....	2,058.83
8 & 859 (Forward)	.....	2,058.83

Dec. 31, 1910:

Credits.

xpenses, &c., charged by U. G. I. Co.	.....	2,622.41
epairs, Stores, Auths., &c.	.....	5,651.19
		10,332.43
reasurer (to meet int. on Pref. Stock Contracts)	.....	19,000.00
		29,332.43

Debits.

ash	5,879.01	.....
ccounts Payable	19,000.00	.....
undry Sales	50.80	.....
		24,929.81
		4,402.62

(Here insert lithographs, pp. 845-851, 854-856.)

860 COMPLAINANT'S EX. #72.

10/4/11.

Complainant's Exhibit No. 72.

10/4/11.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

FEB. 11, 1911

Prof. Wm. D. Marks, Park Row Building, New York City.

MY DEAR PROFESSOR MARKS: I have your letter of Feb. 9th closing bill for service and expenses. I will take the matter up w the council within a few days. We shall have to allow the bill then provide some way to pay for it later as I told you, probably making a levy to cover this and some other unexpected charges.

I suppose you have mailed me a statement advising the pro action as to regulation and rates in our gas situation, but for s reason it has miscarried and I have not received it. I very m want this statement from you as a basis for our proposed action. called the company up the day after you left and signified my p able course whereupon they asked for a written proposition from This they still have under consideration. Why it is requiring much deliberation I do not know but at any rate they are more i mood to treat than they were before you came.

If you will also give me what you found as to the power hous will be of great value to me in our street railway negotiations.

I want to assure you that I appreciate very much your assist in our gas controversy so far and that unless we succeed in worl out a settlement we shall want you to return for a fuller invest tion and testimony later.

Very truly yours, —— ——, *Mayo*

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861-869 COMPLAINANT'S EX. #73.

10/4/11.

Complainant's Exhibit No. 73.

10/4/11.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

THE CITY OF DES MOINES, IOWA,
Feb. 9th, 1911.

To Wm. D. Marks, Dr.

For professional service and opinions in the matter of a fair and reasonable price for gas, February 1, 2, 3, 4, 5, 6, 7—7 days @ $50.00 per day		$350.00
Traveling expenses:		
February 1st	$45.60	
" 2nd	4.90	
" 3rd	2.65	
" 4th	32.00	
" 5th	21.10	
" 6th	9.10	
" 7th	6.11	
		121.46
		$471.46

HORACE SUSONG,
City Clerk.

(Here follow pasters, marked pages 870-880.)

881 COMPLAINANT'S EX. 89.

J. P. B.

Cost per Foot of Water Mains Laid in Buffalo, 1902–1906, Inclusive.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

Size of pipe.	Feet of pipe laid.	Cost of pipe.	Specials.	Lead, coke, etc.	Carting.	Misc.	Labor.	Total.
4".....	7,744	$.266	$.064	$.057	$.003	$.004	$.373	$.767
6".....	70,806	.417	.074	.073	.004	.002	.421	.991
8".....	325	.618	.283	.118	....	.002	.506	1.527
10".....	2,097	.772	.101	.098	....	....	.483	1.454

Average cost of trenching and backfilling for above five year period was 57¢ per cu. yd.

882 COMPLAINANT'S EX. 90. 10/14/11.

Liability Insurance on Basis of 1910 *Pay Rolls and Sales of* 532,000,000 *Cubic Feet.*

	Pay rolls.		Premium rate.	Total annual premium.
I. Operating Works and Distribution System.	$62,625.48	@	$9.90	$6,199.92
II. Clerical Force.....	50,490.64	@	1.16	585.69
III. Vehicles:				
4 Motor Cycles.....	.....	@	42.00	168.00
2 Tri-Cars.....	.....	@	84.00	168.00
18 Teams.....	.....	@	15.00	270.00
1 Automobile.....	.....	@	56.25	128.75
1 Automobile.....	.....	@	72.50	
IV. Elevators:				
4 Factory Elevators.....	.....	@	12.50	50.00
				$7,570.36
V. Property Damage Outside of Plant..... Distribution Pay Roll Only 1910.....	37,943.91			

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

883 I—Operating works and distribution system:

Maximum liability for injuries to one person.	Maximum liability for any one accident.	Rate per $100.00 of pay roll. Employees' liability.	Public liability.	Total rate.	Page, liability manual.
$5,000.	$10,000.	$.75	$4.50	$5.25	90
7,500	35,000.	Add 60% to above.		3.15	11

a Workman's Collective Insurance based on limit of year's wages not to exceed $1,500.
b Loss of two limbs, or two eyes same as death limit.
c Loss of one limb, one-third death limit.
d Loss of one eye, one-eighth death limit.
e Temporary total disability, one-half wages for twenty-six weeks, limit $750. 1.50 1.50 40

$9.90

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884 II—Clerical force:

Maximum liability one person.	Maximum liability one accident.	Rate per $100.00 of pay roll. Employees liability.	Public liability.	Total rate.	Page, liability manual.
$5,000.	$10,000.	$.10		$.10	10
7,500.	35,000.	Add 60% to above.		.06	11
Workman's Collective Insurance the same as "I."		1.00		1.00	40
				$1.16	

885 III—Vehicles:

Annual Premium.

Maximum liability. One person.	Maximum liability. One accident.	Personal liability.	Property liability.	Total.	Page, automobile manual.
$5,000	$10,000				
4 Motor Cycles—Schedule III..		$30.00	$12.00	$42.00	25
2 Tri-Cars—Schedule III.....		60.00	24.00	84.00	23
9 Teams—(Outside of Chicago).		12.50	20% added	15.00	31-35 Liab. Manual
9 Tool Carts—(Same as teams—See letter of 9-16-11—Witmer & Kauffman).					
1 Automobile—35 H.P.—Schedule III.....		58.00	14.50	72.50	17 Auto. Manual.
1 Automobile—36 H.P.—Schedule III.....		45.00	11.25	56.25	17 " "

Property Liability limited to $1,000 on all vehicles—

(For limit of $7,500 and $35,000 on teams add 60%—
" " " $10,000 and $30,000 on Automobiles add 55%—
" " " $10,000 and $30,000 on Motor Cycles and Tri-Car Motor Cycles add 55%—See Page 11 Automobile Manual.)

NOTE.—Schedule III is for operating vehicles other than in the cities of Chicago, New York, Boston and Philadelphia, which takes a higher rate.

886 IV—Elevators:

Maximum liability, one person.	Maximum liability, one accident.	Annual premium, personal liability only.	Page, liability manual.
$5,000	$10,000	.....	..
Factory elevators.....		$12.50	18

(For limits of $7,500 and $35,000, add 60%.)

887 CONSTRUCTION.

Liability Insurance on Basis of 1910 *Pay Rolls and Sales of* 532,000,000 *Cubic Feet.*

	Pay roll.	Premium rate.	Total premium.	Page, liability manual.
Laying mains and services...	$28,736.43	$14.50	$4,166.78	57
Additions, alterations, and repairs to works.....	5,866.32	7.30	428.24	48
			$4,595.02	

(Excluding structural steel, sewers, tunneling, shafts, and subways.)

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888 *Laying Mains and Services.*

Maximum liability for injuries to one person.	Maximum liability for any one accident.	Rate per $100.00 of pay roll. Employees' liability.	Public liability.	Total rate.	Page, liability manual.
$5,000	$10,000	$3.00	$4.50	$7.50	57
7,500	35,000	Add 60% to above.		4.50	11
Workman's collective insurance.....		2.50	....	2.50	40
				$14.50	

889 & 890 *Additions, Alterations, and Repairs to Works.*

(Excluding structural steel, sewers, tunnelling, shafts, or subways.)

Maximum liability for injuries to one person.	Maximum liability for any one accident.	Rate per $100.00 of pay roll. Employees' liability.	Public liability.	Total rate.	Page, liability manual.
$5,000	$10,000	$2.50	$ .50	$3.00	48
7,500	35,000	Add 60% to above		1.80	11
Workman's collective insurance..	....	2.50		2.50	40
				$7.30	

(Here follows table, p. 890.)

891 COMPLAINANT'S EXHIBIT No. 92.

11-4-11.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

Capital City Gas Light Company
to
Des Moines Gas Company.

Warranty Deed.

Know all Men by These Presents, That Capital City Gas Light Company of Des Moines, Iowa, a corporation organized under the laws of the State of Iowa, in consideration of the sum of one dollar ($1) and other valuable considerations to it paid by Des Moines Gas Company, of Des Moines, Iowa, a corporation organized under the laws of the State of Iowa, does hereby Sell and Convey unto the said Des Moines Gas Company, its successors and assigns, all its right, title and interest in and to the following described real estate situate in the County of Polk, and State of Iowa, towit:

Lots numbered three (3), four (4), five (5), six (6), seven (7), eight (8), nine (9), and ten (10) in Block "B"; also lots numbered one (1), two (2), three (3), four (4), five (5), six (6), seven (7), eight (8), nine (9), and ten (10) in Block "C"; also lots numbered three (3), four (4), five (5), six (6) and seven (7), in Block "T"

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all in Scott & Dean's Addition to the Town of Fort Des Moines, now included in the corporate limits of the City of Des Moines.

Also, the complete system of gas works of the Grantor, and everything connected therewith located upon the real estate aforesaid, together with all mains and pipes of said Grantor, and all appurtenances thereunto belonging, situate in the streets, alleys and other public or private grounds and places in said City of Des Moines, Polk County, Iowa, and in said Polk County, Iowa, outside the limits of said city. The intent hereof being to, and said Grantor does hereby bargain, sell, convey and confirm unto the said Grantee, its successors and assigns, the entire system of gas works of said Grantor, and all real estate, which it may own or be in any manner interested or entitled to in whole or in part, whether herein particularly
892 described or otherwise, situate in said City of Des Moines, and in said County of Polk, State of Iowa.

And said Grantor hereby covenants with the said Grantee that it holds said premises by good and perfect title; that it has good right and lawful authority to sell and convey the same, that they are free and clear from all incumbrances whatsoever, excepting a mortgage dated January 1, 1897, given to the Union Trust Company, of New York, as Trustee to secure an issue of four hundred thousand dollars ($400,000), at par, of bonds.

And said Grantor covenants to warrant and defend the said premises against the lawful claims of all persons whomsoever, excepting said mortgage aforesaid.

In witness whereof, the said Capital City Gas Light Company has hereunto caused its name to be signed by its President and its corporate seal to be hereunto affixed by its Assistant Secretary, by virtue of a resolution of all the stockholders of said corporation, and by virtue of an order of its Board of Directors heretofore duly adopted and passed this first day of March, A. D. 1906.

CAPITAL CITY GAS LIGHT COMPANY,
By S. T. BODINE, *President.*

Attest:
[CORPORATE SEAL.] JAMES BALL,
Assistant Secretary.

STATE OF PENNSYLVANIA,
County of Philadelphia, ss:

On the first day of March, A. D. 1906, before me Edwin J. Mole, a notary public in and for said county, personally came Samuel T. Bodine and James Ball, to me personally known to be the President and Assistant Secretary respectively of the Capital City Gas Light Company, and said Samuel T. Bodine, being by me first duly sworn, did say that he is the President of the Capital City Gas Light Company, and that the seal affixed to the foregoing instrument
893 is the corporate seal of said corporation; and that said instrument was signed and sealed in behalf of said corporation by authority of its stockholders and Board of Directors, and the said Samuel T. Bodine, President, and James Ball, Assistant Secre-

tary, acknowledged said instrument to be the voluntary act and deed of said corporation.

In Witness Whereof, I have hereunto subscribed my name and affixed my notarial seal on the day and date above written.

[NOTARIAL SEAL.] EDWIN J. MOLE,
Notary Public in and for the County of Philadelphia,
State of Pennsylvania.

My Commission expires January 19, 1907.

Filed for Record March 6, A. D. 1906, at 2:52 o'clock P. M.

MRS. FRANK W. DODSON, *Recorder,*
By GEO. B. HEPBURN, *Deputy.*

STATE OF IOWA,
Polk County, ss:

I, Mrs. Frank W. Dodson, Recorder of said County, hereby certify that the foregoing writing is a copy from the original record in my office, and of the whole thereof, and recorded in Book 475, page 457.

Dated at Des Moines, Iowa, in said County, this 14th day of November, A. D. 1911.

(Signed) MRS. FRANK W. DODSON, *Recorder.*

(Here follows pasters, marked pages 894-898.)

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899 E. O. Kretsinger, Attorney at Law, 408 Court Street.

BEATRICE, NEBRASKA, *February 3rd,* 1911.

Mr. Frank E. Lenhart, City Council Committee, Beatrice, Nebraska.

DEAR SIR: In accord with your acceptance on the 25th ultimo of my proposal of the 13th ultimo, I have made an examination of the property of the Gage County Gas Light & Power Company in your City, with a view of determining a fair rate for gas in your City, and beg to submit the following as my report:

The replacement values of each of the items entering into the physical equipment of the above Company, I find to be as follows:

Real estate:		
6 lots	$900.00	
Value of lease on 80′ x 300′	1,600.00	
		$2,500.00
Buildings:		
Laboratory	$1,210.00	
Retort House	3,555.00	
Condensing Room	905.00	
Purifying House	1,373.00	
Coal Shed	1,459.00	
		$8,502.00
Works Equipment:		
Bar Photometer	$300.00	
Balance	150.00	
Laboratory benches and hood	200.00	
" supplies	600.00	
40 H. P. Boiler and stack	560.00	
½ depth bench 8's	2,400.00	
½ " " arch for 8's	1,800.00	
Overhead steel tank (25 bbls.)	70.00	
3′6″ Water Gas Set complete	4,455.00	
Westinghouse Engine and hoist	225.00	
8″ K. M. Exhauster and B. P.	756.00	
3′0″ x 16′0″ Condenser and B. P.	594.00	
4′ x 4′ x 3′0″ Washer and B. P.	405.00	
3′0″ x 16′0″ Scrubber and B. P.	464.00	
54″ x 54″ Station Meter	774.00	
2 8′ x 10′ x 5′ C. I. Boxes on beams	2,520.00	
3 ½″ x 7″ Engine and Oxide Belt	144.00	
50 M Holder in concrete pit	11,580.00	
900 Brick tar well 7,000 gals	$360.00	
14′ Diam. x 10′ Steel oil tank	150.00	
8,000 Gal. steel oil tank	630.00	
6′ Diam. x 10′ brick tar well	270.00	
5″ x 3½″ x 3½″ Deane pump	120.00	
3′0″ x 16′0″ Sec. Cond. & B. P.	580.00	
4 Extra mouthpieces	160.00	

Main Gas Piping	180.00	
Sewer Piping	89.00	
Misc. Oil, steam and water piping	280.00	
1,000# scale	180.00	
Wall drill press	54.00	
Fire brick and shapes	200.00	
Band saw	150.00	
		$31,400.00

Distribution System.

Mains:

2" W. I. under pavement	1,425'	923.00	
2" " " dirt	44,700'	9,665.00	
3" " " pavement	1,200'	923.00	
3" " " dirt	23,750'	7,567.00	
4" C. I " pavement	3,535'	4,350.00	
4" " " dirt	3,450'	1,959.00	
6" " " pavement	1,150'	1,699.00	
6" " " dirt	1,175'	916.00	
8" " " pavement	1,925'	3,339.00	
10" " " "	825'	1,666.00	
10" " " dirt	700'	867.00	
	83,825'		33,874.00

(1¼") (50') Services:

Under pavement (assumed 30%) = 255 at $24.55		$5,634.00	
Under dirt (assumed 70%) = 595 at $10.15		5,436.00	
	850		11,070.00
Drips—75 at $7.50			563.00

Meters:

89	3 lt. P. P.	at	$8.37	745.00	
13	5 " "	at	9.63	125.00	
985	5 " Ord.	at	7.83	7,713.00	
1	10 " "	at	11.02	11.00	
3	20 " "	at	15.42	46.00	
6	45 " "	at	31.64	190.00	
1,097					$8,830.00
901	Arc lamps in use—170				$2,040.00

Summary Distribution System..	$33,874.00	
	11,070.00	
	563.00	
	8,830.00	
	2,040.00	
		56,377.00

Office Equipment:		
Partitions, table, etc	300.00	
Glassware cabinet	70.00	
Junkers calorimeter	150.00	
Shelving	120.00	
5′ Meter Prover	150.00	
Bench and Misc. tools	300.00	
Steel safe and cabinet	300.00	
Typewriter and desk	125.00	
Burroughs adding machine	200.00	
Standing desk	50.00	
Table	10.00	
Letter press and cabinet	30.00	
Chairs and miscellaneous	75.00	
Double desk	40.00	
		$1,920.00

To the replacement value of all of the foregoing, with the exception of the Real Estate and the lease, must be added 15% to cover the following items:

Engineering	5%
Interest during construction	5%
Legal and organization expense	3%
Casualty liability	2%
Total	15%

There must also be added certain amounts for working capital, represented by stock of gas manufacturing material, gas consuming appliances, accounts outstanding and a margin allowing of the advantageous purchase of materials.

The total amount of working capital necessary, I find to be as follows:

Stock:			
25 Crane heaters	300.00		
32 Gas Ranges	540.00		
6 Portables	44.00		
Mantles, glassware, etc	320.00		
8,000 Gals. Oil	260.00		
902			
150 tons coke	$1,077.00		
10 tons steam coal	29.00		
7,000 gals. Tar	105.00		
800 bu. oxide	200.00		
	$2,875.00		
Two months' Gas Sales—say	4,000.00		
Margin for advantageous purchases and contingencies—say	2,125.00		
			10,000.00

There must also be added to the physical equipment certain amounts which make up the difference between the value of the physical equipment alone and the value of that same equipment when actually connected up with the consumers' appliances and in actual use as a going concern.

This difference is known as Going Value and is made up as follows:

1,097 meters at $22.00	$24,134.00	
Estimated beginning losses for three years	9,000.00	
		$33,134.00

You will notice that there is no allowance whatever for good will nor franchise value.

I therefore find the total present replacement value of the property and business of the Gage County Gas, Light & Power Company to be as follows:

Real Estate		2,500.00
Buildings	8,502.00	
Works Equipment	31,400.00	
Distribution System	56,377.00	
Office Equipment	1,920.00	
	$98,199.00	
Engineering, etc., at 15%	14,730.00	
		112,929.00
Going Value		33,134.00
Working Capital		10,000.00
		158,563.00

I have copies of the income and operating expense as submitted by the Gas Company, and as examined and approved by your Committee and I have used these figures with, however, the following exceptions:

903 There should be no allowance made under operating expense for either advertising or soliciting, as these items represent investments in the getting of business and are properly charged only into capital.

The current repairs, whether to plant or to distribution system, are an operative charge and I have left these items as submitted, but have added an allowance for depreciation of the entire equipment, which is, of course, absolutely necessary in protecting the capital.

It has been general to neglect this item, but the close study given the matter in the last few years by the Public Service Commissions of the several states having them, has made it clear that the actual cost of gas sold cannot be arrived at without this allowance, nor can a fair rate be ascertained until this allowance has been charged off as an operating expense.

The figures submitted by the Gas Company cover a period of eleven months, from January 1st to December 1st, 1910.

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Assuming the results for one year will be twelve times the average monthly results shown by the records, I find the present operating expenses per year to be as follows:

Cost of Manufacture:		
Labor at works	$2,413.00	
" " " Repairs	27.60	
Material " "	76.80	
City Water	130.08	
Expense at Works	508.44	
Purifying Material Works	43.32	
Boiler Fuel "	1,034.04	
Generator Fuel " Coke	4,767.96	
" " " Oil	3,222.48	
		$12,224.04
Cost of Distribution:		
Registering and collecting	555.48	
Complaints (Gratuitous Work)	747.60	
Setting and removing meters	117.60	
Street loss at 50.9¢ per M	825.36	
		2,246.04
Cost and Management and General Expense:		
General office expense	721.08	
Manager's salary	1,161.84	
Incidental expense	46.20	
Clerical salaries	532.20	
Rent, taxes and insurance	2,857.20	
Legal expense	15.36	
Maintenance of Mains	84.60	
" " Services	123.48	
Depreciation at 2½% on $146,065.00	4,864.00	
		10,405.96
Total		$24,876.04

904 To the above operating costs must, of course, be added a fair return on the value of the property represented.

If we assume that 8% is a fair return, we must add to the foregoing expenses $12,685.00 which together with the operating expenses will make a total income of $37,561.04 per year necessary.

Deducting from this total income the amount which should be received from street lamps, ($1,362.24) we have $36,198.80 as the total income to be collected from consumers.

With an annual meter consumption of 21,006,900 cu. ft. as shown by the records of the Company, the annual income of $36,198.80 will mean a net income of $1.72⅓ per thousand cu. ft. of gas sold private consumers.

A flat rate of $1.72⅓, however, is not fair to all the consumers. Quite regardless of consumption there are certain fixed elements of cost entering into the supply of gas to a given consumer.

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The Company must stand ready at all times to supply the maximum demand of each consumer for such time as the consumer may elect and without notice or warning.

In other words, a consumer using only 1,000 ft. of gas per year may elect to use that 1,000 ft. within a period of two or three days.

It is also a fact that a great majority of consumers using less than $1.00 worth of gas per month do represent an actual loss to the Company.

It is therefore proper that in a schedule of rates there should be included first a fixed amount per month which should be paid by every consumer regardless of amount of gas used, and determined by the maximum capacity which he compels the Gas Company to maintain for his particular use.

An average of $.50 per meter per month to cover this readiness to serve charge, is altogether fair to the Gas Company and to the consumer.

905 I would therefore deduct from the foregoing total of $36,198.80 a service charge of $.50 per meter per month or $6,582.00 per year, which leaves $29,616.80 to be derived from the sale of gas itself.

With sales of 21,006,900 cu. ft. of gas per year, this means that the Gas Company must average a net return of $1.41 per thousand cu. ft.

It is therefore my opinion that a fair schedule to cover the sale of gas to the City of Beatrice, Nebraska, under the conditions shown by your Committee is as follows:

1. A readiness to serve charge of $.50 per meter per month regardless of amount of gas consumed.

2. A graduated scale of prices for gas as follows:

Less than	2,000 cu. ft. per month	$1.50	per M.
2,000 to	3,000 cu. ft. " "	1.45	" "
3,000 to	4,000 " " " "	1.40	" "
4,000 to	5,000 " " " "	1.35	" "
5,000 to	10,000 " " " "	1.30	" "
Above	10,000 " " " "	1.25	" "

From each of the above prices per thousand cubic feet there should be allowed a discount of 10¢ per thousand cubic feet for payment within 10 days after rendering the bill.

3. It has become the custom of the Public Service Commission to allow an additional charge of $1.00 for the re-setting of a meter for a given consumer in a given building within a period of one year from the time of removal and this is an eminently fair charge and should be allowed.

Respectfully submitted,

(Signed) HENRY I. LEA.

DEFENDANT'S EXHIBIT 8. 8/1/11. F. C. W.
Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.
W. A. Baehr, p. 31, No. Meters per Year.

Des Moines Valuation—Notes on Depreciation.

907 *Des Moines Valuation, Showing Material and Labor, Contingencies and Insurance, Engineering and Supervision, Preliminary Expense, Interest, Taxes, and Working Capital.*

Item.				
1	Real Estate	$200,000.00		
2	Manufacturing Plant	480,114.56		
3	Distribution System less Meters	1,301,265.89		
4	Meters	166,074.38		
			$2,147,454.83	
5	Contingencies, Insurance, etc.: 10% on Items 2 and 3, $1,781,380.45	178,138.05		
6	Engineering and Supervision, etc.: 5% on Items 1, 2, 3, 4 and 5, $2,325,592.88	116,279.64		
			294,417.69	
7	Preliminary Expense: 2% on Items 1, 2, 3, 4, 5 and 6, $2,441,872.52			$2,441,872.52
				48,837.45
				2,490,709.97
8	Interest During Construction: Rate 6% per year for ½ time, except for Real Estate Preliminary:			
	On Item 1	200,000.00 × .12 =	24,000.00	
	" " 2	480,114.56 × .06 =	28,806.87	
	" " 3	1,301,265.89 × .09 =	117,113.93	
	" " 4	166,074.38 × .03 =	4,982.23	

" " 5	178,138.05 × .06 =	10,688.28		
" " 6	116,279.64 × .06 =	6,976.78		
" " 7	48,837.45 × .18 =	8,790.74		
			201,358.83	
Carried forward				$2,692,068.80

Brought forward				$2,692,068.80
Item.				
9 Taxes:				
Prevailing rate 2¼%.				
On Item 1 @ 2 yr.	$200,000.00 ×	$9,000.00		
" " 2 @ 1 "	480,114.56 ×	10,802.58		
" " 3 @ 1½ "				
less paving and taking up paving ($1,301,265.89—266,237.51)	1,035,028.38 ×	34,932.21		
On Item 4 @ ½ yr.	166,074.38 ×	1,868.34		
" " 5 @ 1 "	178,138.05 ×	4,008.11		
" " 6 @ 1 "	116,279.64 ×	2,616.29		
			$63,227.53	
				2,755,296.33
10 Working Capital:				
Cash on hand		20,000.00		
1½ months' bills outstanding		60,000.00		
Inventory stock appliance		50,000.00		
Mfg. Materials on hand		25,000.00		
			155,000.00	
				$2,910,296.33

909 *Item* # 5.

Contingencies, Omissions and Insurance.

In constructing a property similar to that of the Des Moines Gas Company's plant, it is practically impossible to make such complete plans as will foresee and include every construction detail. The general location of the structures and the main features can usually all be included, but many changes will be necessary that appear only after the construction of the plant has progressed. Those changes occur through unforeseen conditions encountered, such as an unusual character of soil, necessitating extra expenditures for foundations, shoring and draining of excavations; thereby rendering much temporary work necessary. Labor troubles, panics and combinations in restraint of trade are additional emergencies that must be provided for. Damages by floods and acts of God account for other unusual expenditures that must always be included in engineering estimates, especially so when the construction of the property is prolonged over a period of time that would be necessary to produce the gas manufacturing plant and distribution system of the Des Moines Gas Company.

During the construction of any large undertaking the constructor runs a liability risk that he must always guard against to protect himself from loss due to personal injury of employees or non-employees. Such losses must either be insured against or settled by the constructor, and he must protect himself by taking out insurance and charging it into the cost of construction, or else he
910 himself must assume these losses, which likewise must be borne in the cost of construction.

The construction of a gas main distributive system, whereby practically every street in the city is opened throughout its entire length for the purpose of laying mains, and a cross ditch before every house, for services, makes this risk an unusually heavy one.

The cost of insurance against fire damage to all parts of the plant during construction must be included also in the cost of construction.

In general contracting work, it has been customary for contractors to estimate the cost of all labor and material, and then place on this a figure for contingencies and omissions and insurance that runs from 10 to 20 per cent., independent of contractor's profit and superintendence. In my estimate of the construction value of this property I would add 10 per cent. over the bare cost of material and labor to cover this figure of contingency and omissions. This 10% is based on the total of Items #2 and #3 and will be found recorded as Item #5.

911 *Item* # 6.

Engineering and Superintendence.

A gas plant such as the property now owned by the Des Moines Gas Company represents a piece of engineering and construction of

the most intricate nature and the general design of such a property demands the attention of the best equipped and experienced engineers, and it is only through the employment of such experience and skill that has developed this complete works and distribution system. The plant is compact and designed so as to produce a good quality of gas of the most uniform product, and the main system is so laid out over the city that the pressure delivered to the nearest as well as the most distant consumer is eminently satisfactory, and delivers the gas under such conditions that it can be used to the best advantage for all purposes.

The costs arising under this head cover the location and surveying of the real estate, the preparation of detailed plans, and specifications; the setting of lines and grades; the inspection of the probable gas consumption in the city, and designing and laying out of the gas main distribution system; supervision of work done under contract, final testing of plant and placing in successful operation.

To cover such engineering costs, I have adopted the usual figure of 5%, assumed by many engineers and architects. This figure has been allowed by the Railroad Commission of Wisconsin in its Order No. U–58, Regulating the Rate of the Madison Gas & Electric Company, decided March 8, 1910, on page 541, where it
912 allowed 5% of the total physical value of the plant for engineering.

This 5% is based on Items Nos. 1, 2, 3, 4, 5 and is enumerated on Item #6.

913 *Item* # 7.

Preliminary and Legal Expenditures.

The preliminary expense should include inspection of the property, legal advice, organization expense, options on real estate, acquisition of franchise, and all additional costs that are necessary to develop the general plans before the actual construction of the property begins; and is a figure that is variously estimated at from one to five per cent., dependent upon the character of the undertaking and the research necessary to determine whether the venture will be a success. Apparently there is no method of determining the cost of such organization except by the percentage basis, and with a properly constructed plant it is only fair to assume a figure that should be at least two per cent. of the value of the property, as represented by Items Nos. 1, 2, 3, 4, 5 and 6.

This item of preliminary expense will be found enumerated as Item #7.

914 *Item* # 8.

Interest During Construction.

The interest to be allowed during the construction of the manufacturing plant and the distribution system of the Des Moines Gas

Company consists of such amount as would pay for the use of the money during the time that it is employed in the development of the property, before the plant itself is on an operating basis, figured at 6%. The plant of the Des Moines Company, if constructed under the best conditions, would require to complete the manufacturing plant at least two years. The mains, services, meters and paving would occupy a time of at least three years, as such work cannot be undertaken, practically, more than nine months of the year. Therefore the interest on the real estate would be 6% for two years, or 12% total. Preliminary and legal expense, being an expenditure occuring with the starting of the organization, should be covered by an interest charge of 6% for the three years, or 18% of the total.

On the manufacturing plant, which I have assumed would take two years to construct, the money employed in its construction would be obtained as needed, and the interest charges would thus cover a period of half the time for the total amount or one year at 6%, while for the construction of mains, services and meters, which would take three years to install, the same conditions should be allowed, and the interest charges would be for one and one-half years at 6%, or 9% on the total. Interest on meters at one-half a year, or 3%.

915 Interest should be charged on moneys expended in Contingencies and Omissions, and also in all charges for Engineering and Superintendence. It will be a fair assumption to average these costs as existing for one year, in which case the interest charges will be 6% on Items Nos. 5 and 6.

This total interest charge will be denoted as Item #8.

916 *Item* # 9.

Taxes During Construction.

The taxes during construction should be assumed at the prevailing rate, being applied each year to the average amount invested in the plant for that year. This would represent a tax on the real estate covering a period of two years, and on the general works, buildings and apparatus an amount that would cover their entire cost over a period of a year, on the Distribution system for 1½ years and on meters for one-half year.

Taxes are omitted in cost of all paving over mains and services.

The prevailing rate of taxes is 90 mills on $1.00 on one-fourth the valuation, which is equivalent to 2¼%. This is shown as Item #9.

917 *Item* # 10.

Working Capital.

The working capital necessary for the operation of an undertaking of the nature of the Des Moines Gas Company is that capital that is necessary to be held as a quick asset, either as cash on hand or general stores and supplies for the manufacture of gas. It includes that amount of ready money which is necessary to enable the Com-

pany to affect many economies in operation that are represented by discount of bills and purchase of materials in quantity. It also includes that investment to provide for that quantity of gas which has been consumed and which still remains unpaid. There are many various claims as to the quantity invested for such purposes, and it is exceedingly difficult to estimate on a percentage basis, although a fair estimate may often be obtained by assuming a certain percentage of the gross yearly business. This figure, however, is dependent upon the nature of the undertaking and its general location due to the convenience for the purchase of materials and supplies.

For a property such as the Des Moines Gas Company, it is fair to assume that a storeroom account covering all materials necessary for the extension of the manufacturing plant and distribution system as well as stock of consumers' appliances must be kept on hand in an amount that experience has lead me to estimate at a value of at least $50,000.00.

918 The stock of manufacturing materials on hand would be represented by an amount approximately equal to $25,000.00. The cash on hand necessary for the daily operation and purchase of materials should be represented by an amount of at least $20,000.00, while the moneys invested in gas delivered and not paid for would represent an average of one and one-half month's business, which is represented by about $60.000.00, or a total of $155,000.00, which is shown as Item #10.

919 *Item* # 11.

The Going Value.

The going value is that expenditure which comes upon the Company in the development of its business. It varies greatly with character of the business, whether it is supplying a commodity which is an absolute necessity of life, or whether it is supplying a commodity having competition with another commodity. The intangibility of such a value renders it most difficult for an absolute determination to be made of its worth.

In many cases it has been represented by a certain percentage of the gross business obtained yearly, while in other cases it has been represented as a fraction of the total moneys invested in the undertaking. It may be represented by a sum of money on which the profits of the undertaking will enable a specific rate of interest to be paid; in other words, it may be represented by such a sum as will enable the earnings from the property to be capitalized.

This method, however, has been criticised as the earnings might be based on those obtained by extortionate rates being charged for the gas.

However, that the going value is a substantial value has not been denied, and in view of the many various guesses or statements made as to its derivation, it behooves us to make some definite plan as to the determination of its worth.

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920 I think one of the best methods of obtaining the worth of such a going value or business development should be based upon a certain cost per thousand cubic feet of gas sold, which should be compared to the opportunities of the Company, in the city in question, and in its efforts to obtain and hold competitive business from other companies supplying a utility that can be used in its stead.

Under normal conditions, I believe the going value should be represented by a figure covering the total business obtained by that company over a period of years, giving ten years as a fair length of time, as in a well developed community this time should suffice for a complete development of the business in view, and place the company in a position to obtain any new business.

I believe that for a well developed company, a charge of 10¢ per thousand cubic feet of gas sold for the last year of its development is a very fair charge, although during the first few years of its entry into the business, there would be necessitated an expenditure much greater, and this may approximately be placed at 19¢ or 20¢ per thousand cubic feet of gas sold. If such amount be applied to the sales of the Des Moines Gas Compasy covering a period of 1901 of 19¢ per thousand and gradually reduced to 10¢ per thousand 1910 would represent a total going value of $502,250, which, averaging over a period of ten years represents a charge of 13.5¢ per
921 thousand cubic feet of gas sold. This I consider a fair going value for the Des Moines Gas Company and I have enumerated it in the schedule as Item #11.

LOSE IN CENTER

Value, Age and Life—Manufacturing Plant.

Item No.	Description.	Kind of material.	Amount.	Life yrs.	Age yrs.
	Real estate		$200,000.00	..	..
	Buildings:				
1	Purifying house	Brick	8,736.01	50	18
2	Fire brick shed	Corrug. Iron	94.53	30	1
3	Meter, Governor, Exhauster and Wash Room	Brick	6,176.47	50	34
4	Retort, Generator, Engine and Blower House	Brick	4,320.32	50	34
5	Coal Shed, Scrubber and Condenser Room	Brick	1,782.38	50	34
6	Boiler and Engine Room	Brick & Steel	6,497.09	50	8
7	Boiler House Extension	" "	1,172.63	50	1
8	Generator House	" "	13,288.79	50	5
9	Coal Shed	Frame	5,639.37	30	14
10	Runway and Coal Shed	"	769.46	30	9
11	Smith, Carpenter Shop and Store Room	Brick & Wood	7,689.70	50	34
12	Barrel Oil Storage House	Reinf'd Concrete	265.97	50	1
13	Pump House	Brick, Steel & Concrete	638.71	50	1
14	Pump House	Brick	203.38	50	3
15	Meter House	Brick, Steel & Concrete	1,359.09	50	1
16	Stable	Frame	1,848.85	30	20

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Value, Age and Life—Manufacturing Plant—(Continued).

Item No.	Description.	Kind of material.	Amount.	Life yrs.	Age yrs.
	Buildings—(Cont'd):				
17	Boiler House	Steel & Galv. Iron	$725.24	50	4
18	Fire Brick Store House	Frame	87.01	30	5
19	Hose House	"	33.38	30	5
20	Coke Shed	"	557.36	30	23
	Total Buildings		$61,885.74	..	..
	Contents:				
1	Purifying House		20,954.42	50	17
2	Meter, Governor, Exhauster and Wash Room		21,951.03	30	5
3	Retort, Generator, Engine and Blower House		28,105.45	30	18
4	Coal Shed, Scrubber and Condenser Room		1,348.25	30	6
5	Boiler and Engine Room		14,563.69	25	7
6	Boiler House Extension		1,918.79	25	1
7	Generator House		45,398.37	30	1
8	Coal Shed		123.48	30	12
9	Runway and Coal Shed		1,497.84	30	9
10	Smith, Carpenter Shop and Store Room		1,011.43	20	5
11	Pump House		1,075.88	20	5
12	Pump House		252.14	20	3
13	Meter House		8,753.37	30	1

Value, Age and Life—Manufacturing Plant—(Continued)

Item No.	Description.	Amount.	Life yrs.	Age yrs.
	Contents Building—(Continued):			
14	Boiler House	$1,472.28	25	3
	Total Contents	$148,426.42	..	..
	Outside Apparatus:			
1	Relief Holder #18	28,441.00	50	28
2	Storage Holder #19	46,111.56	50	18
3	Storage Holder #20	105,417.50	50	7
4	Oil Tank #21	5,573.21	50	8
5	Oil Tank #22	3,119.07	50	13
6	Tar Tank #23	1,295.17	50	19
7	Oil Tanks Nos. 24 and 25	16,275.62	50	2
8	Old Holder Tank #36	78.44	50	17
9	Coke Rack #54	68.27	20	3
10	Lumber in Yard	73.05	20	New
11	Wells, Valve Boxes, Tar Separators, etc	2,512.35	30	15
12	Wells, Valve Boxes, etc	614.85	30	15
13	Small Piping	13,754.07	30	5
14	Oil Unloading Device	164.03	30	3
15	Gas Mains in Works Yard	16,064.38	50	10
16	Electric Wiring	170.08	30	5
17	Paving	2,305.49	50	9
18	Gauges	627.25	20	5

Des Moines Gas Company.

Value, Age and Life—Manufacturing Plant—(Continued).

Item No.	Description.	Amount.	Life yrs.	Age yrs.
	Outside Apparatus—(Continued):			
19	Fire Protection	$570.04	20	5
20	Fences and Gates	1,804.46	20	5
21	Miscellaneous Apparatus	2,260.50	20	10
22	Works Tools	2,500.00	10	2
	Total Outside Apparatus	$249,800.39	..	..
23	Improvements on Leased Property	20,002.01	20	2
	Total, Outside Apparatus and Improvements on Leased Property	$269,802.40	..	..

Summary.

Real Etate	$200,000.00
Buildings	61,885.74
Contents	148,426.42
Outside	269,802.40
	$680,114.56
Distribution	1,467,340.27
	$2,147,454.83

Buildings—Determination of Averages.

Item No.	Age. (1)	Life. (2)	Fractional depreciation. (3)	Value. (4)	Depreciation. (5)	(4) x (2) (6)	(4) x (1) (7)
1	18	50	18/50 = .36	8,700	$3,132	$435,000	$156,600
2	1	30	4/30 = .03	100	23	3,000	100
3	34	50	34/50 = .68	6,200	4,216	310,000	210,800
4	34	50	34/50 = .68	4,300	2,924	215,000	146,200
5	34	50	34/50 = .68	1,800	1,224	90,000	61,200
6	8	50	8/50 = .16	6,500	1,040	325,000	52,000
7	1	50	1/50 = .02	1,200	24	60,000	1,200
8	5	50	5/50 = .10	13,300	1,330	665,000	66,500
9	14	30	14/30 = .47	5,600	2,632	168,000	78,400
10	9	30	9/30 = .30	800	240	24,000	7,200
11	34	50	34/50 = .68	7,700	5,236	385,000	261,800
12	1	50	1/50 = .02	300	6	15,000	300
13	1	50	1/50 = .02	600	12	30,000	600
14	3	50	3/50 = .06	200	12	10,000	600
15	1	50	1/50 = .02	1,400	28	70,000	1,400
16	20	30	20/30 = .50	1,800	900	54,000	36,000
17	4	50	4/50 = .08	700	56	35,000	2,800
18	5	30	5/30 = .17	100	17	3,000	500
19	5	30	5/30 = .17	50	8	1,500	250
20	23	30	23/30 = .43	600	258	18,000	13,800
Totals				61,950	23,318	2,916,500	1,098,250

Des Moines Gas Company.

Buildings—Determination of Averages—(Cont'd).

$$\text{Average age} = \frac{\text{Total (7)}}{\text{Total (4)}} = \frac{1{,}098{,}250}{61{,}950} = 17.7 \text{ Say } 18 \text{ Years.}$$

$$\text{Average life} = \frac{\text{Total (6)}}{\text{Total (4)}} = \frac{2{,}916{,}500}{61{,}950} = 47.1 \text{ Years.}$$

$$\text{Average Depreciation} = \frac{\text{Total (5)}}{\text{Total (4)}} = \frac{23{,}318}{61{,}950} = 37.6\%.$$

Determination of Averages.

Average age ..... = $\frac{\text{Total (7)}}{\text{Total (4)}}$ $\frac{2,781,396}{269.737}$ = 10.3 years.

Average life ..... = $\frac{\text{Total (6)}}{\text{Total (4)}}$ $\frac{12,280.80}{269.737}$ = 45.5 Years.

Average Depreciation ..... = $\frac{\text{Total (5)}}{\text{Total (4)}}$ $\frac{59,974}{269.737}$ = 22.2%.

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931 Des Moines Gas Company.

Value, Age and Life—Distribution System.

Item.	Description.	Amount.	Life, years.	Age, years.
1	Street Mains	678,520.13	50	8.97
2	Mains Under River	38,375.07 √	50 30	6.56
3	Paving Over Mains	196,477.24	50	8.97
4	Taking Up Paving Over Mains	30,209.66	50	....
5	Street Main Valves	3,226.76	50	8.97
6	Street Main Drips	3,950.79	50	8.97
7	Steam Railroad Crossings	1,910.00	50	8.97
8	Street Railway Crossings	2,225.00	50	8.97
9	Domestic Services & Setting Meters	284,946.88	25	8.94
10	Lamp Services & Posts	17,692.80	25	8.94
11	Paving Over Services	34,161.75	25	8.94
12	Taking Up Paving Over Services	5,388.86	25	8.94
13	Meters in Use	159,457.36	25	7.70
14	Meters Out of Use	6,617.02	25	7.70
15	Distribution Tools	5,180.95	10	2.00
		1,467,340.27		

Average Age of Mains Installation Basis 10.3
" " " Meters " " 8.27
" " " Services " " 8.27

932 Des Moines Gas Company.

Average Age of Mains—On Investment Basis.

Year.	Investment.	Years in service.	Investment years.
1910	50,207	0	0
1909—10 mo	29,733	5/6	24,778
1909—12 mo	22,356	1 5/6	40,986
1908	52,717	2 5/6	149,365
1907	87,672	3 5/6	336,076
1906—2 mo	345	4	1,380
1905	65,485	5	327,425
1904	23,998	6	143,988
1903	50,997	7	356,979
1902	40,890	8	327,120
1901	38,833	9	349,497
1900	7,934	10	79,340
1899	13,917	11	153,087
1898	12,967	12	155,604
1897	20,124	13	261,612
1896	23,139	14	323,946
1895	3,819	15	57,285

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Des Moines Gas Company.

Average Age of Mains—On Investment Basis—Cont'd).

Year.	Investment.	Years in service.		Investment years.
1894	444	16		7,104
1893	2,842	17		48,314
1892	975	18		17,550
1891	5,064	19		96,216
1890	9,672	20		193,440
1889—6 mo	3,550	20.5		72,775
1889	9,172	21.5		197,198
1888	542	22.5		12,195
933				
1887	9,734	23.5		228,749
1886—6 mo	59	24.		1,416
1885	5,504	25.		137,600
1884	3,928	26.		102,128
1883	3,152	27.		85,104
1882	21,990	28.		615,720
1881	561	29.		16,269
1880	1,142	30.		34,260
1879	409	31.		12,679
1878	16,516	32.	(5,495,697) (Ave. 8.6)	528,512
Jan. 26, 1878 (1878-1864) (14 yrs.)	9,357	35.7 x		334,045
	649,746			5,829,742

$$\text{Average Age} = \frac{5,829,742}{649,746} = 8.97 \text{ Years.}$$

Against 10.30 years on Mileage Basis.
x = (32: 14: : 6.6: x).

COPY BOU

934 Des Moines Gas Co.

Average Age of Mains. (Installation Basis.)

Year.	Total miles end of year.	Number miles installed during year.		Years in service.		Total year—miles.
1910.....	183.89	6.73	x	0	=	0
1909.....	167.16	9.28	x	1	=	9.28
1908.....	157.88	6.70	x	2	=	13.40
1907.....	151.18	8.17	x	3	=	24.51
1906.....	143.01	21.71	x	4	=	86.84
1905.....	121.30	16.91	x	5	=	84.55
1904.....	104.39	5.48	x	6	=	32.88
1903.....	98.91	10.16	x	7	=	71.12
1902.....	88.75	7.24	x	8	=	57.92
1901.....	81.51	9.16	x	9	=	82.44
1900.....	72.35	2.93	x	10	=	29.30
1899.....	69.42	4.91	x	11	=	54.01
1898.....	64.51	6.84	x	12	=	82.08
1897.....	57.67	8.84	x	13	=	114.92
1896.....	48.43	10.47	x	14	=	146.58
1895.....	38.36	.92	x	15	=	13.80
1894.....	37.44	.13	x	16	=	2.08
1893.....	37.31	1.04	x	17	=	17.68
1892.....	36.27	.40	x	18 Av. 6.29		7.20
1891.....	35.87	35.87	x	27		968.49
1890–1864.... 26 yrs.	0	183.89*				1,899.08
Average age.....						10.3 yrs.

*18: 26: : 6.29: x
x = 9.08.

935 Des Moines Gas Co.

Meters—Average Age (On Investment Basis).

Year.	Investment.		Years service.	Dollars—years.
1910.....	$12,715	x	0	0
1909 (10 Mos.)....	12,361		5/6	10,301
1909 (12 Mos.)....	5,858		1 5/6	10,740
1908.....	12,458		2 5/6	35,298
1907.....	24,973		3 5/6	95,730
1906 (2 Mos.).....	4,136		4	16,544
1905.....	20,531		5	102,655
1904.....	5,222		6	31,332
1903.....	17,205		7	120,435
1902.....	8,267		8	66,136

D CLOSE IN CENTER

Des Moines Gas Co.

Meters—Average Age (On Investment Basis).—Continued.

Year.	Investment.		Years service.	Dollars—years.
1901	9,918		9	89,262
1900	8,245		10	82,450
1899	12,763		11	140,398
1898	5,706		12	68,472
1897	5,009		13	65,117
1896	3,633		14	50,862
1895	1,908		15	28,620
1894	1,246		16	19,936
1893	576		17	9,792
1892	1,965		18	35,370
1891	809		19	15,371
936				
1890	1,579	x	20	$31,580
1889 (6 mos.)	159		20.5	3,260
1889 (12 mos.)	*2,865		21.5	*61,598
1888	23		22.5	518
1887	108		23.5	2,538
1886 (6 mos.)	784		24	18,816
1885	1,192		25	29,800
1884	1,264		26	32,864
1883	1,206		27	32,562
1882	5,263		28	147,364
1881	933		29	27,057
1880	330		30	9,900
1879	507		31	15,717
1878	351		32 Av.=7.49 Yrs.	11,232
	186,348			1,396,426
Jan. 26, 1878	1,418		35.3 x	50,055
1878–1864, 14 years.	.....		.. 1,396,426	1,446,481
	187,756			

$$\text{Average Age} = \frac{1,446,481}{187,756} = 7.70 \text{ years.}$$

(32 : 14 :: 7.49 : x
x = 3.3
Against 8.27.

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937

Des Moines Gas Co.

Average Age of Meters (Installation Basis).

Ink Figures by W. A. B.

Year.	Total number of meters end of year.	Number of meters installed during year.	Years in service.			Total meters, Years.
	*19,903	*1,464				
Nov. 1, 1910.....	†[19,742]	[1,303]	x	0	=	0
Dec. 31, 1909.....	18,439	1,339	x	1	=	1,339
1908.....	17,100	1,027	x	2	=	2,054
1907.....	16,073	1,433	x	3	=	4,299
1906.....	14,640	1,700	x	4	=	6,800
1905.....	12,940	1,504	x	5	=	7,520
1904.....	11,436	1,041	x	6	=	6,246
1903.....	10,395	1,497	x	7	=	10,479
1902.....	8,898	1,216	x	8	=	9,728
1901.....	7,682	1,257	x	9	=	11,313
1900.....	6,425	1,117	x	10	=	11,170
1899.....	5,308	1,181	x	11	=	12,991
1898.....	4,127	648	x	12	=	7,776
1897.....	3,479	611	x	13	=	7,943
1896.....	2,868	380	x	14	=	5,320
1895.....	2,488	263	x	15	=	3,945
1894.....	2,225	178	x	16	=	2,848
1893.....	2,047	173	x	17	=	2,941
1892.....	1,874	154	x	18	=	2,772
1891.....	1,720	182	x	19	=	3,458
1890.....	1,538	200	x	20	=	4,000
1889.....	1,338	17	x	21	=	357
F'w'd.....		*18,582				

938

Des Moines Gas Co.

Average Age of Meters (Installation Basis)—Continued.

Ink Figures by W. A. B.

F'w'd.....		*18,582				
1888.....	1,321	17	x	22		374
1887.....	1,304	43	x	23 (Av. 6.85)		989
1886.....	1,261	1,261	x	29.1		36,695
1886–1864 23 yrs...	0	[19,742]† * 19,903		....		163,357

$$\frac{163,357}{19,742} = 8.27 \text{ years (average age of meters).}$$

*In ink in copy.

†Figures enclosed in brackets erased in copy.

D CLOSE IN CENTER

939

Des Moines Gas Co.

Services—Average Age (On Investment Basis).

Year.	Investment.	Years service.	Dollars—years.
1910	$18,579	0	0
1909 (10 mos.)	14,002	5/6	11,668
1909 (12 mos.)	12,636	1 5/6	23,166
1908	12,538	2 5/6	35,524
1907	14,738	3 5/6	56,496
1906 (2 mos.)	649	4	2,596
1905	19,306	5	96,530
1904	14,913	6	89,478
1903	23,045	7	161,315
1902	17,843	8	142,744
1901	23,339	9	210,051
1900	16,944	10	169,440
1899	10,897	11	119,867
1898	7,716	12	92,592
1897	6,901	13	89,713
1896	6,879	14	96,306
1895	2,364	15	35,460
1894	1,617	16	25,872
1893	1,548	17	26,316
1892	2,272	18	40,896
1891	2,134	19	40,546
940			
1890	1,783	20	35,660
1889 (6 Mos.)	852	20.5	17,466
1889 (12 Mos.)	2,601	21.5	35,921
1888	1,381	22.5	31,072
1887	2,358	23.5	55,413
1886 (6 Mos.)	599	24	14,376
1885	2.776	25	69,400
1884	1,439	26	37,414
1883	1,604	27	43,308
1882	3,183	28	89,124
1881	1,174	29	34,046
1880	617	30	18,510
1879	428	31	13,268
		Av. 8.26	
1878	725 252,380	32 2,084.754	23,200
Jan. 26, 1878	6,411	35.6	228,232
1878–1864, 14 Y'rs.	258,791	....	2,312,986

$$\text{Av. age} = \frac{2,312,986}{258,791} = 8.94 \text{ years.}$$

x(32 : 14 :: 8.26 : x)

x = 3.6.

Against 8.27.

COPY BOUND

941 Des Moines Gas Company.

Value, Age, and Life.

	Average life. (1)	Age. (2)	Value. (3)	Age—Dollars. (3) x (2) (4)	Life—Dollars. (3) x (1) (5)
Buildings	47.1	17.7	61,950	1,096,515	2,917,845
Contents	32.0	7.9	148,625	1,174,138	4,756,000
Outside Apparatus	45.5	10.3	269,737	2,778,291	12,273,034
			480,312	5,048,944	19,946,879

$$\text{Average Age of Plant} = \frac{4}{3} \frac{5{,}048{,}944}{480{,}312} = 10.5$$

$$\text{Average Life of Plant} = \frac{5}{3} \frac{19{,}946{,}879}{480{,}312.} = 41.5$$

942 Des Moines Gas Company.

Value, Age, and Life Distribution System.

Items.	Amount.	Life dollars.
2	38,375.07 x 50	1,918,753.50
1, 3, 4, 5, 6, 7, 8	915,519.58 x 50	45,775,979.00
9, 10, 11, 12	342,190.29 x 25	8,554,757.25
13, 14	166,074.38 x 25	4,151,859.50
15	5,180.95 x 10	51,809.50
	1,467,340.27	60,453,158.75

$$\text{Average Life} = \frac{60{,}453{,}158.75}{1{,}467{,}340.27} = 41.2 \text{ Years.}$$

		Age dollars.
River Mains	38,375.07 x 6.56	251,740.46
Mains & Paving	915,519.58 x 8.97	8,212,210.63
Services & Paving	342,190.29 x 8.94	3,059,181.19
Meters	166,074.38 x 7.70	1,278,772.73
Tools	5,180.95 x 2.00	10,361.90
	1,467,340.27	12,812,266.91

$$\text{Average Age} = \frac{12{,}812{,}266.91}{1{,}467{,}340.27} = 8.73 \text{ Years.}$$

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943 Des Moines Gas Company.

Value, Age, and Life Distribution System.

Less Meters.

Amount.		Years.	Total.
38,375.07	x	50	1,918,753.50
915,519.58	x	50	45,775,979.00
342,190.29	x	25	8,554,757.25
5,180.95	x	10	51,809.50
1,301,265.89			56,301,299.25

$$\text{Average Life} = \frac{56,301,299.25}{1,301,265.89} = 43.3 \text{ Years.}$$

38,375.07	x	6.56	251,740.46
915,519.58	x	8.97	8,212,210.63
342,190.29	x	8.94	3,059,181.19
5,180.95	x	2.00	10,361.90
1,301,265.89			11,533,494.18

$$\text{Average Age} = \frac{11,523,494.16}{1,301,265.89} = 8.86 \text{ Years.}$$

944 Des Moines Gas Company.

River Mains.

1 Laid.	2 Age.	3 Life.	4 Size.	5 Length.	6 Amount.
3/12/08	2.5	50	24	639	10,294.29
12/ /06	4	50	8	673	5,289.78
9/ /01	9	50	16	1,300	22,791.00
					38,375.07

7 Fractional depreciation.	8 Amount depreciation.	9 6 x 2
2.5/50 = .05	514.70	25,735,725
4/50 = .08	423.20	21,159,120
9/50 = .18	4,102.38	205,119,000
	5,040.28	252,013,845

Average Life = 50 Years.

$$\text{Per Cent Depreciation} = \frac{5,040.28}{38,375.07} = 13.13$$

$$\text{Average Age} = \frac{252,013,845}{38,375.07} = 6.57$$

COPY B

945 Des Moines Gas Company.

Value, Age, and Life.

	Average Life. (1.)	Age. (2.)	Value. (3.)	Age dollars. (4.) 3 x 2.	Life dollars. (5.) 1 x 3.
Buildings	47.1	17.7	61,950	1,096,515	2,917,845
Contents	32.0	7.9	148,625	1,174,138	4,756,000
Outside Apparatus.	45.5	10.3	269,737	2,778,291	12,273,034
River Mains	50.0	6.56	38,375	251,740	1,918,754
Mains & Paving	50.0	8.97	915,520	8,212,211	45,775,979
Services & Paving.	25.0	8.94	342,190	3,059,181	8,554,757
Meters	25.0	7.70	166,074	1,278,773	4,151,860
Tools	10.0	2.00	5,181	10,362	51,810
			1,947,652	17,861,211	80,400.39
Composite Age			4	17,661,211	
			3	1,947,652	9.2
" Life			5	80,400,039	
			3	1,947,652	41.3

946 Des Moines Gas Company.

Composite Age and Life Table.

	Life.		Age.
Real Estate	....		....
Manufacturing Plant:			
Buildings	47.1		17.7
Contents	32.0		7.9
Outside Apparatus	45.5		10.3
Total Manufacturing	41.5		10.5
Distribution System:			
Mains & Paving 50	....	8.97	....
River Mains 50	50	6.56	8.87
Services & Paving	25		8.94
Tools	10		2.00
	43.3		8.86
Meters	25		7.70
Total Distribution	41.2		8.73
Total Averages	41.3		9.2

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947 **Des Moines Gas Company.**

	Value.	Average depreciation.	
Buildings	61,950	37.6	23,318
Contents	148,625	22.2	33,833
Outside App.	268,737	22.2	59,974
	480,312		117,125

Average Depreciation Plant 34.4%.

	Value.	Fractional depreciation.		
River Mains	38,375	6.56	.1312	5,035
		50.00		
Mains & Paving	915,520	8.97	.1794	164,244
		50.00		
Services & Paving	342,190	8.94	.3576	122,367
		25.00		
Meters	166,074	7.70	.308	51,151
		25.00		
Tools	5,181	2	.2	1,036
	1,467,340	10		343,833

Average Distribution Depreciation = 23.4%.
Average Distribution Depreciation less Meters = 22.5%.

948 **Des Moines Gas Company.**

Real Estate.

Total Value of Real Estate With Its Proportions of Engineering and Preliminary Expense, Interest, and Taxes.

Value	$200,000.00
Add Engineering and Supervision 5%	10,000.00
	$210,000.00
Add Preliminary Expense, 2%	4,200.00
	$214,200.00
Add Interest, 2 years at 6% = 12%	25,704.00
	$239,904.00
Add Taxes, 2 years at 2% = 4.5%	10,795.68
	$250,599.68

No Depreciation on Real Estate.

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949 Des Moines Gas Company.

Manufacturing Plant.

Value of Manufacturing Plant with Its Proportions of Contingencies, Engineering, Preliminary Expenses, Interest, and Taxes, Less a Depreciation on Total Amount.

Value	$480,114.56
Add Contingency Insurance 10%	48,011.46
	$528,126.02
Add Engineering and Superintendence 5%	26,406.30
	$554,532.32
Add Preliminary Expense 2%	11,090.65
	$565,622.97
Add Interest one year 6%	33,937.38
	$599,560.35
Add Taxes One year 2.25%	13,490.11
Total	$613,050.46
Less Depreciation 24.4%	149,584.31
	$463,466.15

950 Des Moines Gas Company.

Distribution System Without Meters.

Value of Distribution System, Without Meters, with Its Proportions of Contingencies, Engineering, Preliminary Expenses, and Interest. Taxes are Included on All Except Paving and Taking Up Paving Over Mains and Services. Depreciation is Then Taken on Entire Amount.

Value	$1,301,265.89
Add Contingency Insurance 10%	130,126.59
	$1,431,392.48
Add Engineering and Superintendence 5%	71,569.62
	$1,502,962.10
Add Preliminary Expense 2%	30,059.24
	$1,533,021.34
Add Interest 1½ years at 6% = 9%	137,971.92
	$1,670,993.26
Add Taxes (Total Distribution less paving; see following page)	44,857.46
Total Value	$1,715,850.72
Less Depreciation 22.5%	386,066.41
	$1,329,784.31

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951 Des Moines Gas Company.

Paving.

Total Value of Paving with Its Proportions of Contingencies, Engineering, Preliminary Expense, and Interest, but No Taxes.

Value	$266 237.51
Add Contingencies 10%	26,623.75
	$292,861.26
Add Engineering 5%	14,643.06
	$307,504.32
Add Preliminary Expense 2%	6,150.09
	$313,654.41
Add Interest 9%	28,228.90
	$341,883.31
Distribution less Meters after adding for Contingencies, etc.	1,670,993.26
Subtract Paving	341,883.31
Total on which Taxes are taken	$1,329,109.95
Taxes on above at 1½ years at 2½% = 3.375%	44,857.46

952 Des Moines Gas Company.

Meters.

Total Value of Meters, With Their Proportion of Engineering, Preliminary Expense, Interest, and Taxes With Depreciation as Shown Below:

Value	$166,074.38
Add Engineering and Superintendence, 5%	8,303.72
	$174,378.10
Add Preliminary Expense, 2%	3,487.56
	$177,865.66
Add Interest ½ year at 6% = 3%	5,335.97
	$183,201.63
Add Taxes ½ year at 2½% = 1.125%	2,061.02
Total Value	$185,262.65
Less Depreciation, 30.80%	57,060.90
	$128,201.75

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53 Des Moines Gas Company.

Summary of Total Valuations and Depreciations.

Based on Straight Plus Line Depreciation and No Scrap or Minimum Service Value, Contingencies, Engineering, Supt. Preliminary Expense, Interest and Taxes Being Compounded.

	Value and con., ins., eng., supt. prelim. exp., int. and taxes.	Depreciation.	Depreciated value.
Real Estate.....	$250,699.68	0	$250,699.68
Works	613,050.46	$149,584.31	463,466.15
Distribution Less Meters	1,715,850.72	386,066.41	1,329,784.31
Meters	185,262.65	57,060.90	128,201.75
	$2,764,863.51	$592,711.62	$2,172,151.89

Average Depreciation = 21.4%.

954 Des Moines Gas Company.

Total Depreciation.

Straight Line Depreciation.

	Replacement value.	Per cent dep.	Depreciation amount.	Depreciated value.
Real Estate	$200,000.00	0	0	$200,000.00
Plant:				
Buildings	61,885.74	37.6	$23,269.04	38,616.70
Contents	148,426.42	22.8	33,841.22	114,585.20
Outside App.	269,802.40	22.2	59,896.13	209,906.27
	$480,114.56	24.4	$117,006.39	$363,108.17
Distribution System:				
River Mains.....	38,375.07	13.12	5,034.81	33,340.26
Mains & Paving..	915,519.58	17.94	164,244.21	751,275.37
Services & Paving.	342,190.29	35.76	122,367.25	219,823.04
Tools	5,180.95	20.00	1,036.19	4,144.76
	$1,301,265.89	22.5	$292,682.46	$1,008,583.43
Meters	166,074.38	30.8	51,150.91	114,923.47

Depreciation on Material and Labor used to determine the per cent. depreciation of entire plant = 23.66.

Average Depreciation on Distribution System including Meters = 23.4.

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955 Des Moines Gas Company.

Future Depreciation.

Basing Future Depreciation on Life of Plant as Estimated and Applied to the Past.

	Life years.	Age.	Depreciation per cent.	Yearly.
Real Estate	....	.....	....	....
Plant	41.5	10.5	24.4	2.32
Distribution System	43.3	8.86	22.5	2.54
Meters	25.0	7.70	30.8	4.00
Total	41.3	9.2		

Applying to Revaluation of Entire Plant, based on Material and Labor plus Contingencies, Engineering, Preliminary Costs, Interest and Taxes, will give the Yearly Depreciation as follows:

Real Estate	250,699.68	x	0 =	0
Mfg. Plant	613,050.46	x	.0232 =	14,222.77
Distribution System	1,715,850.72	x	.0254 =	43,582.61
Meters	185,262.65	x	.04 =	7,410.51
Total	$2,764,863.51			$65,215.89

Depreciated Value of Plant =	2,172,151.89
Add Working Capital =	155,000.00
Above Yearly Depreciation = 2.8 Add "For Going Value"	350,000.00
	$2,677,151.89

Yearly Depreciation on basis of last figure = 2.44.

956 Des Moines Gas Company.

4% Sinking Fund Basis.

$$x = \frac{(1+i)^m - 1}{(1+i)^n - 1}$$

Given $n = \begin{cases} 41.5 \\ 43.3 \\ 25.0 \end{cases}$

m = Age
n = Life

$m = \begin{cases} 10.5 \\ 8.86 \\ 7.70 \end{cases}$

Log. of $1.04 = .0170333$

$$x = \frac{(1+.04)^{10.5} - 1}{(1+.04)^{41.5} - 1} = \frac{(1.04)^{10.5} - 1}{(1.04)^{41.5} - 1} = \frac{1.50956 - 1}{5.09193 - 1}$$

COPY BO

$$\frac{.50956}{4.09193} = .1245 = 12.45\%$$

$$x = \frac{(1+.04)^{8.86}-1}{(1+.04)^{43.3}-1} = \frac{(1.04)^{8.86}-1}{(1.04)^{43.3}-1} = \frac{1.41552-1}{5.46438-1}$$

$$\frac{.41552}{4.46438} = .0931 = 9.31\%$$

$$x = \frac{(1+.04)^{7.7}-1}{(1+.04)^{25.0}-1} = \frac{(1.04)^{7.7}-1}{(1.04)^{25.0}-1} = \frac{1.35256-1}{2.66563-1}$$

$$\frac{.35256}{1.66583} = .2116 = 21.16\%$$

957 Des Moines Gas Company.

3½% Sinking Fund Basis.

Log. of $1.035 = .0149403$.

$$x = \frac{(1+.035)^{10.5}-1}{(1+.035)^{41.5}-1} = \frac{(1.035)^{10.5}-1}{(1.035)^{41.5}-1} = \frac{1.4357-1}{4.16891-1}$$

$$\frac{.4357}{3.16891} = .137 = 13.7\%$$

$$x = \frac{(1+.035)^{8.86}-1}{(1+.035)^{43.3}-1} = \frac{(1.035)^{8.86}-1}{(1.035)^{43.3}-1} = \frac{1.35635-1}{4.43522-1}$$

$$\frac{.35635}{3.43522} = .104 = 10.4\%$$

$$x = \frac{(1+.035)^{7.7}-1}{(1+.035)^{25.0}-1} = \frac{(1.035)^{7.7}-1}{(1.035)^{25.0}-1} = \frac{1.30329-1}{2.36324-1}$$

$$\frac{.30329}{1.36324} = .2225 = 22.25\%$$

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958 Des Moines Gas Company.

Depreciation by Compound Sinking Fund.

Applying Compound Interest, 4%, Sinking Fund, Depreciation Rates, With No Scrap or Minimum Service Value, We Got a Depreciation for the Plant as Follows:

Real Estate	250,699.68	x	——		250,699.68
Plant	613,050.46	x	12.45 =	76,423.78	536,725.68
Distribution System.....	1,715,850.72	x	9.31 =	159,745.70	1,556,105.02
Meters	185,262.65	x	21.16 =	39,201.58	146,061.97
	2,764,863.51		9.96	276,272.06	$2,489,591.45

Total Depreciation on entire Plant = 9.96 or $275,272.06 or a depreciated value of $2,489,591.45 as compared with "Straight Line" depreciation $592,711.62 and a depreciated value of $2,172,151.89.

959 Des Moines Gas Company.

Depreciation by Compound Sinking Fund.

Applying Compound Interest, 3½%, Sinking Fund, Depreciation Rates, with no Scrap or Minimum Service Value, we get a Depreciation for the Plant as Follows:

Real Estate.....	250,699.68	x	——		250,699.68
Plant	613,050.46	x	13.7 —	83,987.91	529,062.55
Distribution System.....	1,715,830.72	x	10.04 =	172,271.41	1,543,579.31
Meters	185,262.65	x	22.25 =	41,220.94	144,041.71
	2,764,863.51	x	10.76 =	297,480.26	$2,467,383.25

Total Depreciation on entire Plant = 10.76 or $297,480.26 or a depreciated value of $2,467,383.25 as compared with "Straight Line" depreciation $592,711.62 and a depreciated value of $2,172,151.89.

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60 Des Moines Gas Company.

Depreciation.

Applying Sinking Fund Compounded, Allowing for Scrap or Minimum Value, 4% Basis.

	Value.	Depreciation.	Depreciated value.
Real Estate	250,699.68	.....	250,699.68
No Scrap.			
Plant	613,050.46	.....	.....
5% Scrap = 85% on value.			
5% = $521,092.89	.....	.....	91,957.57
2.45% Depreciation.....	.....	64,876.06	.....
			485,968.83
Distribution	1,715,850.72	.....	.....
No Scrap.			
9.31% Depreciation	.....	159,745.70	.....
			1,556,105.02
Meters	185,262.65	.....	.....
10% Scrap = 90% on value.			
90% = $166,736.38	.....	.....	18,526.27
21.16% Depreciation	.....	35,281.42	131,454.96
	2,764,863.51	259,903.18	2,534,712.33

This gives a depreciated value of 2,534,712.33 which is a depreciation of 8.32%.

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961 Des Moines Gas Company.

Depreciation.

Applying Sinking Fund Compounded, Allowing for Scrap or Minimum Value, 3½% Basis.

	Value.	Depreciation.	Depreciated value.
Real Estate	250,699.68	.....	250,699.68
Plant	613,050.46	.....	.....
15% Scrap = 85% on value.			
85% = $521,092.87	.....	.....	91,957.57
13.7% Depreciation	.....	71,389.73	449,703.16
Distribution	1,715,850.72	.....	.....
No Scrap.			
10.4% Depreciation	.....	178,448.47	1,537,402.25
Meters	185,262.65	.....	.....
10% Scrap = 90% on value.			
90% = 166,736.38	.....	.....	18,526.27
22.25% Depreciation	.....	37,098.84	129,637.54
	2,764,863.51	286,937.04	2,477,926.47

This gives a depreciated value of $2,477,926.47 which is a depreciation of 10.38%.

962 Des Moines Gas Company.

Estimated Scrap Value.

	Per cent.
Real Estate	100
Works Buildings	15
Contents	15
Outside	15
Mains and Paving	0
Services and Paving	0
Tools	0
Meters	10

Per Cent Charges Covering Interest, Engineering, Preliminary Expense, Interest, and Taxes.

Principal.	Interest.	Engineering.	Preliminary.	Interest.	Taxes.
Real Estate	0	5	2	(2x6) 12	(2x2½) 4.5
Works	10	5	2	(1x6) 6	(1x2½) 2.25
Distribution	10	5	2	(1½x6) 9	(1½x2½ less paving) 3.375
Meters	..	5	2	(½x6) 3	(½x2½) 1.125

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CHARTS

TOO

LARGE

FOR

FILMING

966 DEFENDANTS' EXHIBIT 18—J. P. B.

D.—18.

Filed April 5, 1912. Wm. C. McArthur, Clerk.

APRIL 8, 1911.

Mr. Rollin Norris, for Walton Clark, 2d V.-P., Philadelphia, Pa.

DEAR SIR: In your Annual Estimate letter of December 15, 1910, I note that you ask for an appropriation to cover foundations for a new holder. I have sent in I. & R. Req. No. 187, under date of March 22, 1911, for $30,000 to cover this item.

I have been studying over this situation to see if we could not eliminate the erection of this holder for another year, but I am afraid to take this chance unless our sendout should be more disappointing than I now anticipate.

For the first three months, our sendout shows an increase of about 8%, and if this same percentage were carried on to our maximum week, it would give an average daily sendout of 2,160 M.

While our available storage is only 1,400 M., of this available storage there is only 700 M. available for the peak loads. This is because the upper lift of the No. 4 holder and the entire No. 3 holder are too light to give sufficient pressure, although I realize that they act as a safeguard against the gas going out on the town within their capacity of 700 M.

I am satisfied that this holder foundation should be commenced not later than September first unless we find that the conditions as to sendout have radically changed. The plans for this
967 foundation will have to be prepared in ample time and this brings me down to the question of the location.

I have prepared and enclose a blue print of the property in Block "A," the purchase of which I recommended in my Annual Estimate letter. In this print I show in the upper sketch the available ground provided we were to make an arrangement with the C. B. & Q. Railway to square up the property by giving and taking an equal number of square feet so that the east and west lines on the north of the property would then be parallel to the east and west line of the south line of the property. I find, however, that if this arrangement were made, while it would have the advantage of squaring the property up, it would limit the diameter of each of the two holders which could be built in it, to 150′.

In the lower part of the print I show a diagram of Block "A" in which the subdivisions of the block, or lots, are shown by dotted lines. Lots No-. 1, 2, 3, 4, 5, 7, 8, 9, 10 and 12 and the N½ of Lot No. 11 are immediately available for purchase and the S½ of Lot No. 11 can be purchased if desired for about $5,000, or $6,000, but I have not seen the owners recently as I do not wish to stir them up.

With the property available as above a new holder could be erected as shown by the solid line circle within a diameter of 151′ and an additional holder could be erected as shown by the broken

line circle on the same size at some future time. It would not be necessary, therefore, to purchase the S½ of Lot No. 11 immediately. I would recommend, however, that an appropriation be made available for the purchase of the S½ of Lot No. 11
968 and that it be left open in event of the owners making a proposition to sell at some future time that would be attractive to us.

The C. B. & Q. Railway have advised me that they would not object to condemning the alley on which they own the frontage of Lot No. 13.

I would recommend the purchase of Lots Nos. 1, 2, 3, 4, 5, 7, 8, 9, 10, 11, and 12 for the erection of this new holder and that the foundations and holder be erected of a capacity of two and one-half million feet. This block with the exception of Lots Nos. 6 and 13 can be bought for $35,000, but I do not wish to approach the owners of the S½ of Lot No. 11 with a view to purchasing unless it is decided to purchase the block, as I think that they will probably raise their price and if some of the old buildings that are on this block were torn down before they were approached I believe that they would be more willing to sell.

In reviewing the general real estate situation at the plant the real estate now owned will not all be available because all the lots in Block "T" will have to be abandoned or sold for park purposes and we will have to provide storage room for which the lots in Block "K" are most valuable by reason of their trackage facilities.

In my judgment the NE quarter of Block "B" is much too valuable property under the circumstances on which to build a holder on account of its proximity to the rest of the plant where it should be available for other internal improvements to take care of the growth of the business. In addition to this the railroad tracks on the north line of Block "B" run very close to the fence and
969 while it would be possible to construct the proper foundations for a holder and a masonry retaining wall, it would require pretty expensive construction to hold up this railroad track while we were doing the work on account of the holder occupying all of this quarter block.

I wish you would give this matter careful consideration because in planning the foundations for the holder the additional 11′ in diameter available on Block "A" should, I believe, by all means be taken advantage of.

Awaiting your reply, I am,

Yours very truly,

—— ——, *Manager.*

J. H.—E. D.

970 MARCH 9th, 1911.

Mr. Jansen Haines, Manager, Des Moines Gas Company.

DEAR SIR: I have carefully read the annual estimate as attached to Mr. Norris' letter of January 6th, and beg to make the following comments:

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I believe that Mr. Norris has covered nearly everything that we will need in his letter, but I note that he has omitted the Kennicott Water Weigher which we asked for in a letter sent in subsequent to our Annual Estimate under date of September 20th 1910. It is possible that this has been omitted because, I understand, the Weigher has not been entirely satisfactory in Omaha on account of the scale depositing in the mechanism of the Weigher and interfering with its action. With our new feed water purifier, there will be no hard scale thrown down beyond the outlet of the purifier, which will overcome this objection.

I would like very much to have a weigher in this situation because, as you know, the boiler fuel consumption has always been considered high here, and while I have given a good deal of personal attention to it and succeeded in reducing it somewhat, I am still of the opinion that a further reduction is possible, and believe that this water Weigher would very greatly assist in the work.

971 Mr. Norris has again taken up the question of real estate, and states that our present real estate consists of slightly over five acres. I give below a list of the real estate now owned by this Company:

Block "C," all	78,205,518	sq. ft.	1.795	acres
" "B," "	77,840,000	"	1.786	"
" "T," Lots 3-4-5-6-7	9,600,000	"	0.220	"
" "K," Lots 2-3-4-5-6	54,978,000	"	1.262	"
5/6ths of Lot 1				
½ of alleys				
" "M," Lots 9 and 10	17,358,000	"	0.398	"
	236,529,518	"	5.461	"

Of this property, about two-thirds of the portion owned in Block "K" is used for distribution storage and shop.

On Block "B" is located our stable and horse lot, and the area occupied by the stable is barely sufficient for our present needs. While there is no question in my mind but that in the future the stable equipment will be replaced by some form of motor vehicles, these vehicles will have to be stored and cared for in some location adjacent to the distribution storage and shop. The distribution storage should for economical reasons be located as nearly as possible to the center of distribution, and while this does not quite hold in our present case, I do not believe that there is any other property which could be obtained for the purpose anywhere near the center of distribution except at a prohibitory price, and I think that this also applies to property not so favorably located.

972 I think therefore that it is a safe assumption to make that as Block "B" becomes occupied with works extensions, that we will probably want to more our transportation storage to Block "K" and that Block "K" should be reserved for that purpose, possibly reserving a portion of the west end of it for reserve fuel storage.

The lots owned on Block "T" are no longer available for works use, as they are located on the river bank and will ultimately be taken by the City for Park purposes.

Deducting, therefore, Block "T" and Block "K" from the real estate for Works purposes, it narrows down to a trifle less than four acres, which will be sufficient to send out 4,000,000 ft. It must be kept in mind, however, that our property is not contiguous, being separated by streets, which there is no possibility of closing.

Block "A" which adjoins Block "B" at the south, can be purchased as Mr. Norris says for about $35,000.00 with the exception of the two lots owned by the C. B. & Q. Railroad on the north. I believe that there will be no difficulty in having the C. B. & Q. Ry square up their lots by trading foot for foot, as shown on Print A-14 attached hereto. This will give a block 280′ x 230′ 4″, and the lots owned by the C. B. & Q. on the north would be of no material detriment as the property is at any rate separated from Block "B" by a 66′ street.

I do not anticipate any difficulty in having the alleys closed in this block, and I would personally undertake to have this done at the proper time.

A 4,000,000 ft. holder can be very satisfactorily located
973 on this lot.

Mr. Norris touches on the point that coke oven gas has been suggested for Des Moines, and suggests that even if Block "A" were acquired that there would still not be enough property available for a coke oven plant.

I have very carefully gone over the Des Moines situation with the idea of locating a coke oven plant, and I do not find any property which I consider available that would so nearly answer our purposes as the property adjoining Block "A" on the south. I enclose, herewith, a sketch showing this property consisting of Blocks "P," "Q," "N," 7, 8, 9, 79 and 80 of Scott & Dean's Add. This property being off any present lines of railroad is not nearly as valuable as railroad frontage. It is bounded on the long side of the triangle by the Des Moines River and on the other sides by gas works property and poor residential properties. It is divided into small lots held by a large number of owners, but a whole or a portion of it could undoubtedly be purchased at a fairly reasonable figure. I am of the opinion that the alleys and streets in the property could be closed, although compensation would have to be paid to the City for the streets. There would be no difficulty whatever in extending railroad sidings to this property, and to my mind it represents an admirable location for a coke oven plant in this city.

Of course, I do not for a moment recommend the purchase of any of this property at this time, but I merely call attention to its availability for future extensions.

974 I strongly recommend, however, that the purchase of Block "A" be seriously considered at once and that the contemplated new holder be installed upon it.

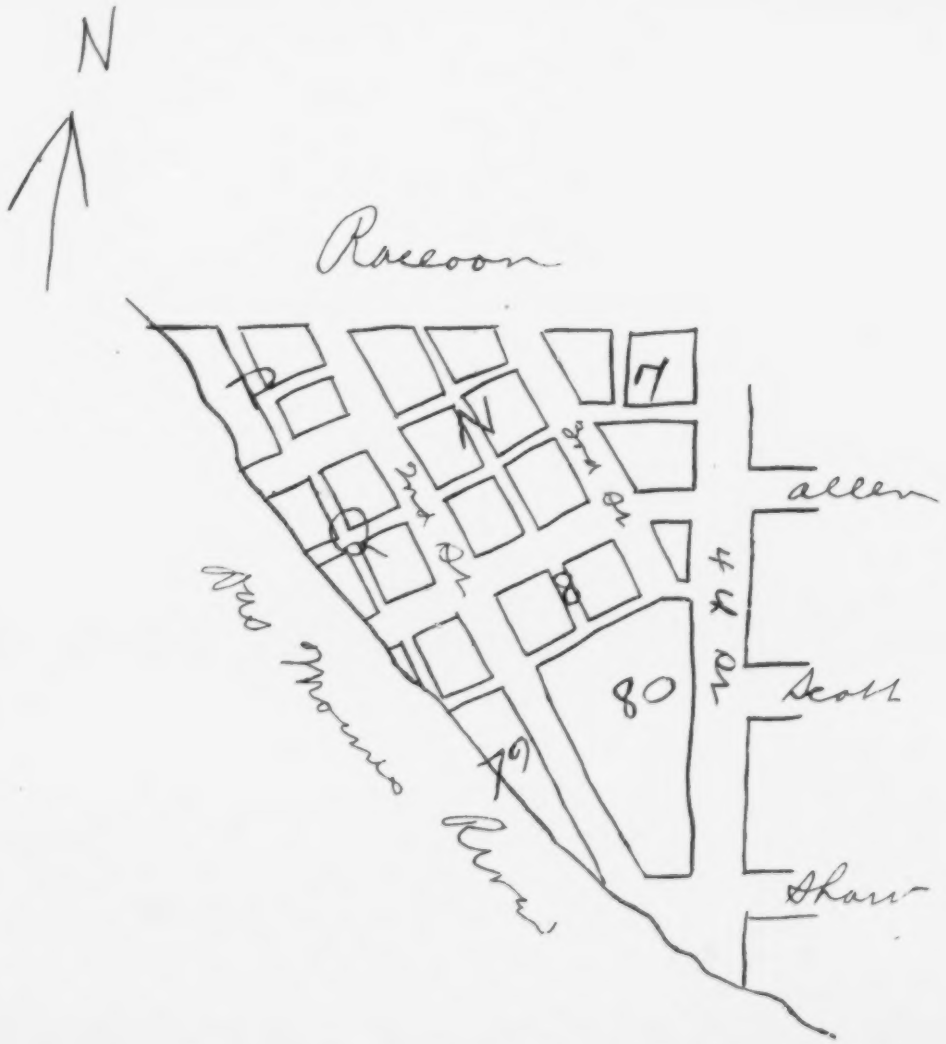
Very truly yours,

G. I. VINCENT, *Engineer.*

G. I. V. / N. J.

(Here follows diagram marked page 975.)

COPY


N
Raccoon
7
N
2nd St
allen
4th St
8
80
Des Moines
Scott
79
River
Shaw

976 *Annual Estimate* 1911.

JAN. 6TH, 1911.

Mr. Jansen Haines, Manager, Des Moines, Ia.

DEAR SIR: I enclose herewith for your files a copy of a proposed Annual Estimate letter to Mr. Clark. I shall be glad to have you go over this letter and let me know whether you wish any alterations made in it.

You will note that I have included a small amount for additional laboratory equipment, and I think this is all that you will need. If later we wish to make additions to our equipment, we can cover it by requisition and charge it against our item of $3,500 for Miscellaneous Works Improvements.

Yours truly,

ROLLIN NORRIS,
For Walton Clark, Second Vice-President.

(Enc.)

977 *Des Moines Annual Estimate* 1911.

DEC. 15TH, 1910.

Mr. Walton Clark, Second Vice-President.

DEAR SIR: I give below a summary of the conditions at Des Moines:

		Increase in gas accounted for.		Increase in gas sent out.	
Year	1909.	7.5%		7.2%	
January	1910.	5.8%		5.8%	
February	"	7.3%		7.7%	
March	"	8.5%		5.6%	
April	"	7.7%		6.4%	
May	"	15.4%		13.3%	
June	"	12.9%	6 Mos. 8.9%	4.6%	6 Mos. 7.2%
July	"	5.8%		2.5%	
August	"	.5%		11.3%	
September	"	8.5%		4.5%	
October	"	8.3%		4.5%	
November	"	7.1%		5.2%	
December	"	3.0%	12 Mos. 7.6%	7.0%	12 Mos. 6.4%

Maximum daily output:

	Actual.	Local estimate.	C. W. Hare's estimate.
Dec. 1909.....	2013 M		
Dec. 1910.....	2228 M		
Dec. 1911.....		2451 M—10%	2451 M—10%

978 Maximum output:

			Per day.
Actual	1909-10		2013 M
"	1910-11		2228 M
Estimated	1911-12	10% increase—	2451 M

Plant.	Capacity per day.	Present net cap.	Net cap after changes.
Generators:			
Reserve ..... 1800 M			
Net	1200 M		
	1200 M		
	300 M		
	300 M		
		3000 M	
Purifiers:			
4 Boxes 20′ x 20′ x 8′			
		3360 M	
Station Meters:			
		5000 M	
Oil Storage:			
	64,000 g.		
	300,000 g.		
	300,000 g.		
	664,000 g.—	68 days.	
Holders:			
Relief ..... 160 M			
Storage	300 M		
	1100 M		
		1400 M	

979 Works: An examination of the preceding page shows that we have ample manufacturing capacity to carry us safely through the winter of 1911-12, but that our purified storage is getting rather small in comparison with our sendout. It is possible that the sendout for the winter of 1912-13 may require an additional holder by that time. In order to have such a holder in time, it would be necessary to start the foundations for the holder in 1911, but it would not be necessary to start these foundations until late in 1911.

We therefore ask an appropriation of $30,000 for the foundation and connections for a new 2,000,000 cu. ft. holder, with the understanding that if this expenditure be authorized, no money will be spent until late in 1911, and then only if we shall satisfy you that the sendout at that time indicates that we may expect a considerable increase in the winter of 1912-13.

Req. # —. Holder Foundations, etc..... $30,000.

Purification: Our purifiers at Des Moines, are 8′ deep, with water seals, and are so arranged that the gas enters the boxes in the middle and divides, part going up and part going down through the oxide. We find that this arrangement causes trouble from deposition of tar on top of the oxide of the lower layer, and the gases do not
980 flow evenly through the two halves of the boxes. We wish, therefore, to rearrange our connections so that gas will enter

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the bottom of each box, which will also give us the opportunity of using a tar-catcher in the bottom of each box to supplement the work of the P. & A. extractor. This, however, will result in a considerable increase in back pressure through these boxes, and therefore, in addition to altering the connections, we wish to replace the present water seals with dry lutes. The water seals of a purifying box not only act as a seal for the box, but also as a safety valve for the escape of gas in the event of any stoppage beyond the purifiers and the replacement of these seals with the dry lute type of construction will make it necessary to install some sort of blow-back device which will relieve the pressure in case of stoppage. We therefore include in our summary an item covering the rearrangement of the purifier seals, the changing of the seals from water seals to dry lutes, and the installation of a safety blow-back. This work is covered by—

Req. #183. Changes to Purifiers, etc. (Rep. $3,000) $5,000

Works office: The Des Moines situation has grown to a point where our present office facilities are cramped and insufficient. The room used for the Works Office contains also two station meters the photometer room and the governors, and we recommend the addition of a second story to this building, in which can be placed
981 our office photometer room and additional laboratory apparatus, which we need but for which we have at present no satisfactory room. The estimated cost of this extension to our Works Office is covered by—

Req. #184. Works Office Extension $3,000

To cover the shifting of the present photometer room and the fitting up of the Laboratory with apparatus for the simpler grades of work, we include—

Req. #190. Photometer & Laboratory Equipment (Rep. $250) $500

Boiler Fuel Scales: Our boiler fuel at Des Moines consists principally of a local coal which is so high in sulphur that it can be stored only in small quantities, and not for any length of time, and consequently is used practically from the cars to the boilers. This gives us a constant check on our boiler fuel consumption, and for our daily consumptions we have been depending upon keeping track of the number of barrow loads of coal brought in. This however, is not satisfactory, and we wish to purchase and install scales for weighing the boiler fuel, these scales to be located in the industrial railway which is now used for handling boiler fuel. This improvement is covered by—

Req. #161. Boiler Fuel Scales $500

982 Real Estate: Mr. Haines again calls our attention to the question of the possible purchase of additional real estate ad-

OSE IN CENTER

joining our present gas works. The greater part of the block adjoining our holder lot could probably be purchased for in the neighborhood of $35,000 and it would undoubtedly be to the advantage of the Company to own such additional property, as it would enable us to locate our proposed new holder on it. If we do not acquire this additional property, we expect to locate the holder on the present holder lot, where the available ground is so small that the holder will have to be rather smaller than we otherwise would make it, or of rather unusual dimensions; that is, it would be very tall for its diameter. If we had the property suggested by Mr. Haines, it would leave this other land for normal works extensions.

Our real estate at present consists of slightly over five acres, and on this land we can get, with a fair degree of ease, a manufacturing capacity of from five million to seven million feet of gas, of which about one-quarter could be coal gas. Our present output is something over two million feet per day, and I believe the amount of plant that can be put on the present land is sufficiently large to justify us in not purchasing any additional land at this time, although I recognize that if not purchased at this time, it probably cannot be purchased at all in the future, except at an increase in cost that would probably be prohibitory.

983 In this connection it should be borne in mind that coke oven gas has been suggested for Des Moines. If the conditions should ever make it wise or necessary for us to install a large coke oven plant at Des Moines, the present site, even with the additional land suggested by Mr. Haines, would not, in my opinion, be large enough, as a coke oven plant requires ample room for the handling of the large amount of coal and coke involved in this process. In view of the above facts, I mention this recommendation of Mr. Haines, and submit it to your consideration without recommendation, but I have not included in my summary any money for additional real estate.

Waste Heat Boiler: We recommend the installation of a waste heat boiler on the 10′ 6″ set. The estimated cost of this apparatus would be $11,000 and the estimated saving in boiler fuel, etc., per year would amount to $6,016 or a gross return on the investment of 54.7%. This is covered by—

Req. #185. Waste Heat Boiler on 10′ 6″ set..... $11,000.

Miscellaneous Works Improvement: To cover miscellaneous works improvements the need for which may be shown during the year, we include an item of—

No Req'n. Misc. Works Improvements..... $3,500.

984 Distribution:

Pressure Mains: To cover the estimated needs for trunk mains, which will be taken up in detail later, we include an item of—

No Req'n. Misc. Pressure Mains..... $20,000

COPY BOUND CL

Small Mains, Meters & Services: It is estimated that Des Moines will need in 1911 for—

Small Mains	$40,000	
Meters and Services	27,000	
		$67,000

985 *Summary.*

Works:

Req. #——.	Holder Foundations, etc.	$30,000	
Req. #183.	Changes to Purifiers, etc. (Rep. $3,000)	5,000	
Req. #184.	Works Office Extension	3,000	
Req. #190.	Photometer and Laboratory Equipment (Rep. $250)	500	
Req. #161.	Boiler Fuel Scales	500	
Req. #185.	Waste Heat Boiler on 10′ 6″ Set.	11,000	
No Req'n.	Misc. Works Improvement	3,500	
			$53,500

Distribution:

No. Req.	Misc. Pressure Mains		20,000	
	Small Mains	$40,000		
	Meters and Services	27,000		
			67,000	
				87,000
	Improvements	$137,250		
	Repairs	3,250		
	Total	$140,500		140,500

Yours truly,

ROLLIN NORRIS.

Recommended for Approval:

——— ———,
Second Vice-President.

986 *Annual Estimate*—1911.

AUGUST 31, '-0.

Mr. Rollin Norris, for Walton Clark, 2d Vice-President, Philadelphia, Pa.

DEAR SIR: I did not include in my Annual Estimate an appropriation for a waste heat boiler to be attached to our 10′ 6″ machine.

From what little data I have on this subject, I am under the impression that the installation of this boiler would be a paying proposition but that the matter is still in the experimental stage and that a permanent design has not been decided upon.

I would be very glad indeed to have a waste heat boiler installed in Des Moines, and if the situation is such that you feel justified in including it in our Annual Estimate, I would be pleased to have you do so.

Very truly yours,

——— ———, *Manager.*

G. I. V.—N. J.

987 August 1, 1910.

Annual Estimate—1911.

SEPT. 1, '10.

Mr. Rollin Norris, for Walton Clark, 2d Vice-President, Philadelphia, Pa.

DEAR SIR: I give below a summary of the condition at Des Moines:

Percentage of Increase in "Gas Send-out":

Year 1909			6.6%
Year 1910, Estimated			10.0%
January	1919	5.80%	Gain
February	"	8.10	"
March	"	5.58	"
April	"	6.35	"
May	"	13.33	"
June	"	4.57	"
½ Year	"	7.21	"
July	"	2.53	"
August	"	3.86	"

I enclose herewith copy of the form enclosed in your letter of above date, which I have filled out as requested.

988 Works: An examination of the apparatus at the Works shows that we have ample capacity in all departments with possible exception of purified storage.

In the winter of 1911 and 1912, we will probably have a maximum daily send out of 2400 M, and in the winter of 1912 and '13 it will probably be 2600 M. This will be very nearly double our purified storage, and I therefore recommend the installation of a two-million foot holder in 1912, the foundation to be built in 1911.

Holder foundations..... $40,000.00

Tar Extraction: The removal of tar from the gas at the works is extremely unsatisfactory, as the P. & A. Extractor installed five years ago does not work. Our purifiers being divided-flow, it is impractical to use any portion of them for tar catch. You have now on file a requisition to change the position of the tar extractor, which we believe will make the apparatus do the work for which it is designed. There is, however, no absolute certainty about this, and I therefore wish to install some auxiliary apparatus to complete the removal of the tar, or to alter the purifiers making them continuous flow, so that a portion of each bottom layer can be successfully used for a tar catch.

This latter alternative is preferable as we have ample purifying capacity, or at least we will have with the through-flow boxes. I do not think that you can count on the rated capacity of boxes when they are divided flow.

COPY BOUND CL

989 I am therefore recommending the alterations to the purifiers making them continuous flow with dry lutes instead of water seals.

Alterations to purifiers..... $2,000.00

Works Office: The room used for the Works office contains also #1 and #2 Station Meters, the photometer room and the governors, and is crowded. I recommend the addition of a second story to this building, in which could be placed our office, photometer room and other laboratory apparatus used at the Works.

Works Office Extension..... $3,000.00

Real Estate: The Des Moines Works' property consists of the following land:

Block C, Works, 280′ x 280′.....	78,400	sq. ft.	
Block "B," Holders & Stable Lot, 280′ x 280′	78,400	" "	
Block "K," Lots 2, 3, 4, 5, 6, and Part of Lot 1	50,820	" "	
Block "M," Lots 9 & 10, 132′ x 132′.....	17,424	" "	
	225,044	" "	5.1 Acres
Block "T," 5 lots on River Front used for Storage, 200′ x 40′.....	8,000	" "	
	233,044	" "	

This is a total of a little over five acres, but the five lots in Block "T" will probably in the near future be absorbed by the Park
990 System, and eliminating this will leave 5.1 acres of available property.

The block of land situated just south of our holder lot and west of our oil storage lot is known as Block "A" and is 280′ x 280′. It is the only available piece of property of any size near the Works. You already have a map of this property on file. Two o . e lots in this block are owned by the C. B. & Q. Railway, that is, L. . #6 and #13. It is not likely that these lots can be purchased as the C. B. & Q. Railway will want them for a right-of-way, should they be required by legislation to remove from the public streets and they already have almost all the right-of-way parallel with the street to the city limits. However, should the City Council agree to condemn the alleys in this block, to which the C. B. & Q. Railway have no objection, I believe that some arrangement could be made with the C. B. & Q. Railway to so adjust their property line with the present owners of the rest of the block as to give them a parallel right-of-way and in this manner square out the block in the one piece of property.

The rest of the lots in this block, which are not owned by the C. B. & Q. Railway, can be purchased for $31,400, or possibly a

LOSE IN CENTER

little less and I believe it is very much to the advantage of the Company to buy this property in the near future. All of it is now collected and title in one person with the exception of the South one-half of Lot No. 11, which I estimate could be purchased, with the buildings, for $7,000. The buildings on this half lot consist
991 of one two story brick residence and one two story brick grocery store, and it might be possible to purchase them for less than $7,000. at this time. The balance of the property contains about fourteen small houses, which rent for about $100. a month and would tend to off set the interest on the investment, without estimating any additional income from rents of the buildings on the south half of Lot No. 11, which are occupied by their owners and whom I have not seen personally in regard to continuing the occupancy in case they should sell out.

I believe that it would be very much to the Company's advantage to acquire as much of this block as can be bought at the present time. While it may not be absolutely necessary for a year or so to own any additional real estate, it is very obvious that ultimately we will have to acquire more, and, should the ownership of this block become dissipated again in small lots, it is more than likely that it would be more expensive to accumulate it from diversified owners, particularly as Des Moines is growing rapidly and traffic facilities are becoming more valuable all the time. I therefore recommend an appropriation of $31,400. for the purchase of this real estate.

992 Additional Real Estate $35,000.00
For Miscellaneous Works Improvement I will ask 3,500.00

Distribution: A careful inspection of our distribution system indicates that the only points where we will probably have low pressure is in the eastern section of the City east of E. 18th. We have already made one extensive addition to the small mains east of this point and have another under way. The northeastern addition, that supplied by Easton Boulevard, can be boosted by connecting the 12" main from Lyon to Walker on E. 18th. The 12" on 18th will then be fed from the 12" on 15th by five strings of 4" pipe of an average length of about 2500', and each one carrying considerable load. That this load amounts to a heavy pull is shown by the loss in pressure last fall of *of* 9/10ths (net 7/10ths) between E. 15th Street and Court, and E. 18th and Walnut.

A rough calculation indicates that the pressure at E. 30th and Walnut will be down to 19/10ths this fall, and will probably be lower than this in the fall of 1911. The pressure at E. 18th and Easton will probably be down to not lower than 22/10ths this fall without the connecting main on 18th between Walker and Lyon, as the business on the extension N. E. of this point will not be fully developed this fall. If the connecting main were not put in next year, I calculate that the pressure at 18th and Easton would be down to 17/10ths in the fall of 1911, which is much too low for a point of supply of an extension.

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I therefore recommend that the following trunk mains be laid this year:

993	E. Court—15th to 18th (Partly Laid)	1200′ 16″.	$3,200.00
	E. 18th—Court to Walnut,	1300′ 12″.	2,500.00
	E. 18th—Lyon to Walker,	700′ 12″.	1,300.00

As I said above, I do not anticipate any other trunk mains will be needed next year, but to cover contingencies, the item for miscellaneous trunk mains should be ample, and I therefore ask,—

Miscellaneous Trunk Mains $5,000.00

For Small Mains, Meters & Services, the following will be sufficient:

Small Mains 40,000.00
Meters & Services 15,000.00

Very truly yours,

—— ——,
Manager.

G. I. V./N. J.

994 *Annual Estimate*—1911.

SEPTEMBER 15, 1910.

Mr. Rollin Norris, for Walton Clark, 2d V.-P., Philadelphia, Pa.

DEAR SIR: Referring again to my annual estimate for 1911, under date of September 1, 1910, I should like to correct an error in the estimate of Small Mains, Meters and Services. The figures given on page seven read—

Small Mains $40,000.00
Meters & Services 15,000.00

$55,000.00

and they should read—

Small Mains $40,000.00
Meters & Services 27,000.00

$67,000.00

Kindly correct my letter accordingly and oblige.

Yours very truly,

—— ——,
Manager.

J. H./E. D.

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995 SEPTEMBER 20*th*, —10.

Mr. Rollin Norris, for Walton Clark, 2d Vice-Pres., Philadelphia, Pa.

DEAR SIR: Confirming my conversation with your- of yesterday, I wish to include in my Annual Estimate one Kennicott Water Weigher.

My understanding is that two of these are now being purchased for installation in two of the U. G. I. plants for trial, and that if these prove successful, that the installation of one for Des Moines will be recommended.

Very truly yours,

——— ———,
Manager.

G. I. V.-N. J.

996 *Memo.*

E. 15th and Court pressure.....	39/10	89	Elevation 7/10
E. 18th and Walnut	30/10	56	" 3/10
East 30th and Walnut	25/10	22	"

4 Strings of 4" 850 yards long, 15th to 18th 9/10 loss 6,000 ft. in hr.
1 String of 6" 2,500 yards long 18th to 30th 3/10 loss 1,600 ft.
Add 800 ft. per hour on Walnut.
" " " " " " Easton Blvd.
Connect E. 18th and Walker to Lyon.
Making 5 strings of 4" pipe which will still give the same pressure at E. 18th with 1600 cu. ft. added delivery.
Adding 800 cubic feet to the 1600=2400
For the delivery out Walnut St. from 18th to 30th.
The pressure at 15th and Court was 39/10 and at 15th and Fremont 34/10 last year same elevation. Mean pressure along 15th St. main say 37/10.
With 18th from Walker to Lyon connected the mean pressure along the 18th Street main should be 28/10.
The pressure at E. 30th and Walnut for delivery of 2400 cubic feet as above and 28/10 at 18th St. is 21/10 gross, 19/10 net.
East 15th to E. 18th on Walker 900 yards.
Loss in pressure fall of 1909 6/10 net.
Delivery 1400 ft. per hour.
Add 500 cubic feet per hour (800 in 1911) gives a loss of 13/10 net.
Pressure at E 18th and Easton will probably be 22/10.
Add 800 cubic feet per hour gives a loss of 17/10 net or the pressure at 18th and Easton would be 17/10.

997 *Annual Estimates.*

PHILADELPHIA, PA., *Aug. 1st*, 1910.

Mr. Jansen Haines, Manager, Des Moines, Iowa.

DEAR SIR: The time is approaching for the preparation of the Annual Estimates for 1911, and I shall be obliged if you will get in your Annual Estimate letter by the first of September, or earlier.

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In order to simplify the getting up of this letter by you, I enclose herewith a blank copy of the same form we used last year for this purpose.

On this form please give the present capacity of your manufacturing plant, as indicated. It also provides a place for you to fill in your estimate of the maximum daily output which will have to be provided for this coming winter and for the winter of 1911-12.

Please fill in on the first page a brief memorandum of what improvements or large repairs you anticipate for 1911, and in the letter which you will send here with the filled-in blank, give such further detail as may be necessary.

In the case of the trunk mains as covered on page 2 of the blank, you will of course be unable to give accurate detailed figures, but please do the best you can and especially call attention to any districts where you expect low pressure areas to develop, and give a lump sum estimate of how much money you expect to need for pressure mains.

Actual determination of the trunk mains needed for 1911 will have to wait until pressures have been taken during the heavy consumption next autumn.

Please estimate the capacity of your purifiers by taking the number of cubic feet of oxide in the boxes between where the foul gas enters and the point where the gas is tested, and multiplying this by 600 ft. per day. This gives the normal daily capacity of the boxes. For instance, if you have a regular 4-box system with 3 boxes in use, you test on the outlet of the second box, and the capacity of the boxes would be the number of cubic feet of oxide in the first two boxes multiplied by 600 cu. ft. of gas per day. For mixed gas use a factor of 500 ft. instead of 600 ft., and for coal gas use 400 ft.

You have a copy of the Annual Estimate letter for 1910 as it went forward to Mr. Clark, and you- letter for 1911 should follow the same general plan, and give detailed explanations of your recommendations.

Yours truly,

ROLLIN NORRIS.

(Enc.)

998

Annual Estimate for 1911.

Des Moines, Iowa. Works.

Maximum Daily Output:

Actual—Winter of 1909-10 = 2013 M
Est'd " " 1910-11 = 2214 M = 10% increase
Est'd " " 1911-12 = 2435 M = 10% increase

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Daily capacity of Present Plant:

Generators.		Purifiers.	Stotion meters.	Oil storage.	Holders.	
Reserue.	Net.				Relief.	Storage.
1800 M	1200 M	3360 M	5000 M	64 M g	160 M	300 M
	1200 M	....	....	300 M g	...	1100 M
	300 M	....	....	300 M g	...	....
	300 M	....	....	...	...	....
	3000 M	....	....	65 days	...	1400 M

Purifiers:

Number of boxes	4
Inside dimensions of box	20 x 20 x 8
Depth of oxide in each box	6'
Maximum rate per hr. actual	125 M

List of new apparatus, etc., needed to take care of the above est'd Output:

1.	—.		
2.	Real Estate	$35,000.00	
3.	Holder Foundations	40,000.00	
4.	Alterations to Purifiers	2,000.00	
5.	Works Office Extension	3,000.00	
6.	Miscellaneous Works Imp't	3,500.00	5,000.00

999

How many tons of generator fuel can you store	1520 tons.
How many days will this last in winter of 1911-12	30 days.
Do you recommend additional storage	No.
How many tons of boiler fuel can you store	300 tons.
How many days will this last in the winter of 1911-12.	12 days.
Do you recommend additional storage	No.
Have your exhausters sufficient capacity to take care of your make, even if the largest one should break down	Yes.

Distribution:

Trunk Mains: What pressure mains will you probably need? Give list and approximate cost:

E Court 15th to 18th, 1200' of 16"	$3,200.00
E 18th Court to Walnut, 1300' of 12"	2,500.00
E 18th Lyon to Walker, 700' of 12"	1,300.00
Miscellaneous Pressure Mains	5,000.00
Give estimated cost for 1911 of Small Mains (in addition to trunk mains given above)	40,000.00
Meters & Services	15,000.00

—— ——, *Sup't.*

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1000 DEF'TS' EX. 22.

J. P. B.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

Capital City Gas Light Company. Des Moines Gas Company.

Analysis of Real Estate Account, 6-30-1886, *to* 12-31-1910.

June 30, 1886, Balance		$8,916.00
Ledger No. 4, Folio 154, Capital City Gas Lt. Co.:		
1897.		
Feb. 28—Cost of land located in Fourth district (Des Moines) Polk County, Scott & Dean's Addition, comprising lots 3, 4, 5, 6, 7, 8, 9 and 10, Block B		25,000.00
Ledger No. 5, Folio 117, Capital City Gas Lt. Co.:		
1901.		
Sept. 30—Cost of Lots 3 and 4, Block T, Scott & Dean's Addition to Des Moines		500.00
Ledger No. 2, Folio 219, Des Moines Gas Company:		
1909.		
Dec. 31—Cost of laying sidewalk		438.61
1910.		
Sept. 30—Cost of surveying on E. First St		33.50
Dec. 31—Cost of Curb and Street Paving at Southwest corner of East 3rd and Vine Street		1,117.15
		$36,065.26
Less:		
Ledger No. 6, Folio 118, Capital City Gas. Lt. Co.:		
1902.		
Oct. 31—Credit	$175.00	
Ledger No. 7, Folio 191, Capital City Gas Lt. Co.:		
1905.		
Jan. 31—Credit	125.00	300.00
		$35,765.26

This does not include the land taken over at the time of the organization of the Des Moines Gas Company.

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1001 DEFENDANTS' EXHIBIT #23.

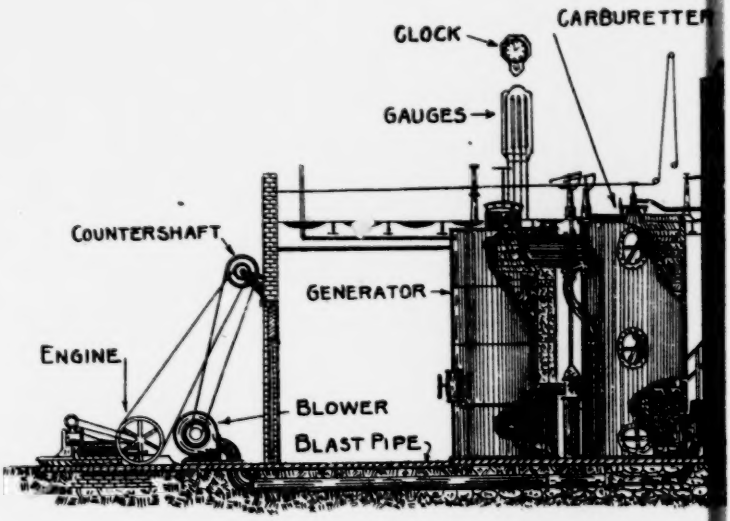
8/15/11. F. C. W.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

Report on the Work of the Des Moines Gas Company by William D. Marks, Consulting Engineer, Park Row Building, New York City.

(Here follows diagram marked page 1002.)

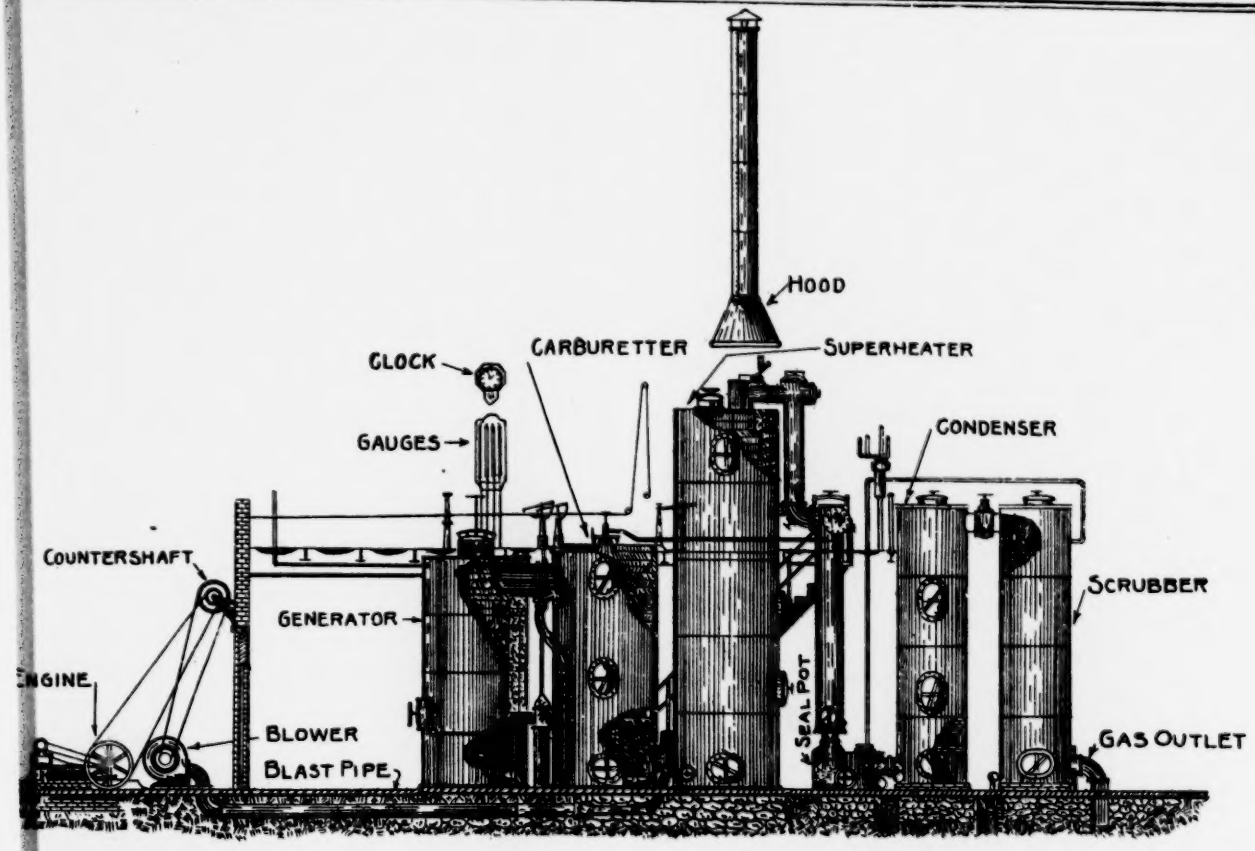
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STANDARD DOUBLE SUPERHEATER LOWE
WITHOUT CONNECTIONS FOR REVERSAL OF ST
SIMILAR TO THE ONE USED BY THE DES

PARK ROW BLDG, N.Y.C.

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STANDARD DOUBLE SUPERHEATER LOWE WATER GAS APPARATUS

WITHOUT CONNECTIONS FOR REVERSAL OF STEAM THROUGH GENERATOR.

SIMILAR TO THE ONE USED BY THE DES MOINES GAS COMPANY.

W BLDG, N.Y.C.

WM. D. MARKS, C.E.

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1008 SECTION 1. Object of This Report. The object of this report is principally to obtain, by means of appraisement, the structural cost and the present value of the works of the Des Moines Gas Company as of November 1st, 1910, and also the cost of supplying gas to the consumer's meter from an investigation and analysis of the books and records of this company.

Incidentally the growth of the sales of gas as related to its price, and also the proper basis of fixing a going value will be touched upon.

SECTION 2. Appraisement List. The Des Moines Gas Company has furnished to the city an elaborate list of all of its real estate holdings, buildings, gas making and gas distributing machinery, but has not appended to it any of the money values of these items, giving merely the physical measurements and quantities in the buildings

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and referring to and indicating the principal measurements of its machinery

From this list, however, with the exception of meters in stock and a pile of lumber, which has been omitted, all reference to the raw material such as coke, coal, gas oil, oxide, lime, etc., etc., required for its operating stock on hand are omitted by the company.

Although not so advised, it appears to me probable that this omission was made with the intention of including it in the working capital. I should say that I have, in my appraisement, included the meters in stock but omitted the small pile of lumber valued at about $75.00. I have made a personal inspection of these works, identifying and examining each detail of this elaborate list so far as I was not prevented from so doing by the material being buried in the ground or otherwise hidden from sight, and I have found it to be exceedingly careful as to the items and correct as to lineal measurements. I have also found a large error in favor of the com-

1009 pany, arising from the representatives of this company adopting what is known as "kiln count" as to the number of bricks in a cubic foot instead of the actual count which, roughly, may be said to be some 25% less.

Kiln count is correct enough as affording a very liberal margin for buildings not yet built, but in this case where the buildings are of the type known as factory or warehouse construction, all of the brick delivered are used and all of the brick bats and spawls can be worked into this structure and so the actual number of bricks per cubic foot give the correct measure.

The details of this correction of quantities are given with the various items and computations.

It will be found that in order to obtain a correct appraisement of the Lowe Carburetted Water Gas apparatus I have been obliged to depart somewhat from the arrangement of the list furnished by the Des Moines Gas Company. This is due to the fact that the United Gas Improvement Company possessing patents and an organized business in the Lowe Water Gas apparatus fixes a lump sum for all the machinery required for a water gas set of each given capacity. I should perhaps add that this list for appraisement furnished by the Des Moines Gas Company is the most exhaustive and complete of any that I have ever seen, and that there is no reason to believe that every item of apparatus worthy of consideration and a great many that were unworthy were included in it, and so I have departed from my usual custom of making allowances for omissions in making my appraisement. At this point it is proper to call attention to the fact that no overhead charges for omissions can be made in this inventory, nor should they be allowed in any proper inventory, although in a preliminary estimate where the engineer has to rely only on his own foresight it is proper to make a percentage allowance for omissions since all of the material is not in place and accessible as in the case of an inventory.

1010 The statement is made that from this appraisement list has been excluded all street mains, services, meters and apparatus required for the village of Valley Junction, and I have no means

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nor the time to verify this statement; for this reason and also for the avoidance of the expense of detailed verification I have made use of, but have not accepted as final, the appraisement list furnished by the Des Moines Gas Company.

I have no reason, from any inspection which I have made, to doubt the substantial accuracy of so much of this list as I have been able to verify by personal visit.

SECTION 3. Accounts and Records of the Des Moines Gas Company. The City of Des Moines, having been granted access to the accounts and records of the Gas Company, is having a careful verification made of the operating expenses for the year 1910, and also a somewhat less extended verification of the four years preceding for the purpose of learning the sales of gas, the gross earnings or revenue derived therefrom and the operating cost of gas at the holder and at the consumer's meter. The figures for revenue and cost used in this report will be based upon the results obtained by the accountants for the city with such modifications as may appear to me from a rational and practical knowledge of the business to be necessary to give fair average results for a period of five years of operation under good management both commercial and physical.

SECTION 4. General Consideration. From such casual judgments as I was able to form the engineering, management and arrangement of these works appears to be very good. Some of the buildings in the northwest corner of the northern square of land are built of poor brick and have had to be braced up in order to prevent them from falling down. The roofs at places too are in very bad shape; particularly in the case of the older buildings, which I should
1011 judge were erected about the year 1876. They are of little value save as they happen to be located and of use where they are so long as they can be prevented from falling down.

The newer buildings and the newer apparatus are of very good quality of material and workmanship and the general condition of the yards and works is one of extreme neatness and order.

These works appear to have a safe daily capacity of generators for about three million cubic feet, and an annual capacity of upwards of six hundred million cubic feet. As the largest daily output to date is reported as being two and one quarter million cubic feet and the largest annual output five hundred and fifty million cubic feet, there still remains a considerable margin for expansion of this business.

The purifying apparatus appears to have about reached its capacity or will have done so at three million cubic feet daily, and the holder capacity of about one million four hundred thousand cubic feet is also as little as should be used with three million cubic feet per day output.

From a rapid inspection of the size of the street mains it would appear as if the distribution system was adequate to the needs of the city, providing care is taken to readjust the system as irregularities of pressure may arise. There are two pushers or pumps for gas now in use which, I was told by an outsider, were used to pump the gas required to Valley Junction and the western edge of the City of Des Moines.

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For this reason I have included these pushers and this high pressure main in the appraisement of the property of this company.

The manufacturing works of this company are located on low land on the east bank of the Des Moines River and possess the usual advantages sought by gas companies of low level for the works
1012 access to an independent supply of water for the circulation system.

Three railway lines pass close to these works and they are connected with the belt line so that it is possible, without unusual expense, to deliver into their yard and tanks all of the coke, coal and gas oil required for the manufacture of carburetted water gas at low rates.

It is usual in most of the gas works of this United States to arrange for the manufacture of coal gas either separately or to be used in the form of mixed gas with the carburetted water gas, and from the abandoned wreck of a bench of retorts the inference is that such arrangements were once made in these works and have since been definitely relinquished.

In the City of Cleveland, Ohio, where coal from the Youghiogheny coal fields can be transported cheaply, they have found it possible to supply gas at the consumer's meter for long years at an average cost of forty-four cents per thousand cubic feet, and have sold it at seventy-five cents per thousand cubic feet. The economy of coal gas with cheap coal results from the sale of residuals which from each ton of coal are about one thousand pounds of salable coke, twelve gallons of tar and about forty cents' worth of ammonia. There is no means of determining how cheaply this coal gas can b manufactured in Des Moines.

The art of making an appraisement cannot be reduced to rigid scientific series of laws, nor is it ever likely to be so reduced. Experienced judgment, the result of thorough technical knowledge of the methods for making gas combined with long commercial and constructing engineering experience, is required to determine either the structural cost or the present value of gas works.

In appraising it is only safe to laboriously look up every
1013 item of a gas works and to apply to the depreciation of these the experienced judgment above referred to for the purpose of depreciating, since depreciation may result from any one of three causes.

Physical decay, which is exceedingly irregular, depending — the care of the machinery and on the severity of its usage as well as the quality of the machine's workmanship. This physical decay is a vanishing quantity and arrangements for meeting it are most safely made on a purely commercial basis by fixing the number of years of the machine's probable life and then regardless of the vagaries of physical decay setting aside a certain amount which will equal the value of the machine at the end of its probable life.

Obsolescence as a factor of depreciation is more difficult to deal with because it depends on the progress of science in the methods of manufacture of gas and also upon invention of the apparatus with which gas is manufactured, stored or distributed.

Inadequacy as a factor of depreciation is one which can be forecasted to some extent and preparation made to meet it.

In discussing depreciation it is necessary to determine which one of the three factors, physical decay, obsolescence or inadequacy, will first terminate the life of the machine or apparatus, and to use this first factor as the basis of depreciation.

In many cases of street mains, services and underground piping in general, it is not possible to closely watch the progress of physical decay, and it is therefor- necessary so far as we are able, to gather together what information comes to the surface and fix the life of the various buried materials.

In the case of cast iron gas mains nobody has lived long enough to determine their life. Cast iron rusts and after the rust has attained a certain thickness it becomes a protecting coat, and,
1014 so far as we know, remains in this condition for a longer period than our experience has yet enabled us to measure.

Wrought iron rusts, scales and rusts again, and in the case of service pipes and underground wrought iron piping of small dimensions it has been the experience in the City of Minneapolis, which in many respects, as to soil, resembles Des Moines, that fifteen years can be regarded as the average life of a wrought iron underground service pipe.

On the continent of Europe houses and factories and other buildings hundreds of years old are very common, but on this side of the Atlantic fifty years appears to be considered the maximum life of factory buildings in most cases.

In the depreciation, which will follow hereafter, of buildings the Somers system in the depreciation of buildings is used because it carries the authority of its adoption by the City of Cleveland and in part by the City of New York, and also in many other cities of the United States.

I have stated the case of an appraisement thus frankly and in advance to show that in appraisements it is as impossible as it would be insincere to claim any excessive degree of accuracy. Although long experience as a specialist will enable an appraiser to obtain the substantial truth in the aggregate of gas works, or other works in which the appraiser has used experienced judgment and laboriously goes into details.

Section 5. Overhead Charges. When the preliminary estimate is made the engineer has usually found it necessary, after collecting and adding up all the raw material and productive labor required, to make an overhead charge to provide for engineering designs, superintendence, general management, taxes and interest on the money invested. In doing this he is obliged to use his judgment as to the length of time required to complete the work. In
1015 this matter of time all engineers would agree with me that a year and a half, including two working summer seasons, is sufficient time in which to erect the manufacturing works complete in every detail.

Regarding the existing system of street mains, one hundred and eighty miles in length, on which a great deal of stress is laid, I would

venture, as my opinion, the statement that all the pipe now underground could be laid without serious disturbance to the traffic of the city in two summer seasons of work, requiring a gang of about four hundred and fifty men to do it. I speak thus confidently because in 1888 and '89 I underlaid the principal streets of Philadelphia with electric conductors, covering all streets of business importance between the Delaware and the Schuylkill Rivers, and Vine Street and South Street, which is the heart of the city and its busiest point.

Referring more particularly to the interest on the investment, taken usually at 6%, and calculated for one half of the time of construction, or nine months, I would say that it is very rarely the fact that a company in good standing has to pay one half the interest on its investment or anything like that amount, as most of the heavy payments come at the completion of the work without interest if contract work, or if for material when it does its own work. For this reason in the present instance it appears perfectly safe to assume 4½% interest on moneys expended and leave a liberal margin.

Referring now to the matter of the cost of drawing and engineering designs, I would say that Wm. Farmer, the foremost engineer of many years ago in New York City, was paid 1% of the cost of the manufacturing plant of the complete gas works of St. Louis for furnishing all of the drawings and specifications required in its construction. This gas works has a daily capacity of one mil-
1016 lion cubic feet of coal gas, and the drawings required for a water gas plant would appear to me to cost considerably less.

Regarding supervision during erection, I would say that the cost of a resident engineer and of a foreman of construction for a year and a half was less than the $7,500.00 paid to Wm. Farmer for drawings for a station costing $750,000.00.

Therefore it appears safe, granting close management, to fix the price of drawings, specifications and supervision during erection at two per cent.

The taxes in the City of Des Moines, I am told, are about two and a quarter per cent on the par value of the property taxed, but it does not appear to be the custom in any community to tax unfinished buildings or unfinished machinery, and the probabilities are that beyond a land tax, which is a relatively inconsiderable amount of the value of the plant, no taxes will be paid. I have therefore fixed it at what I believe a liberal margin: the taxes for a year and a half at two per cent.

In the matter of preliminary organization of the company the question of the cost of the officials, directors, legal advice and general management in the case of a small company organized to meet the first demands of a town just large enough to consider the use of gas, the preliminary cost of organization will be very slight, and after the works are going the operating expense in the case of manufacture of gas would all be charged to the cost of gas making.

In order to be liberal I will reckon the cost of a board of directors and legal advice at twice the actual cost for drawings and supervision, or four per cent.

Recapitulating, we have:

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1017	Interest	4½%
	Drawings and supervision	2 %
Taxes		2 %
General management		4 %
	Total	12½%

Against this percentage objection will at once arise, in the minds of many, to the low rate of overhead charges, I would say that its basis is not a preliminary estimate, which so frequently falls far below the actual cost of a works, but is an inventory in which every detail, every pound of material or machinery is taken account of. If there are any charges for omissions, contingencies, fire and liability insurance, they are very small, indeed, in the case of brick and iron structures such as gas works.

This 12½% overhead charges I shall apply only to the buildings, machinery, gas holders and apparatus in the manufacturing part of the gas works.

Outside the walls of the gas works, for the sake of having a sound distribution system and avoiding heavy losses through the leakage of gas, it is very rarely that the street main system, the services or the meters are put in by anybody save the employés of the establishment under the charge of the operating officials of the gas company.

For this reason I have been accustomed, after carefully obtaining the true cost of the raw material required for street mains and services, to add to the street mains 10% undistributed charges and 15% margin for profit or bad management. To the house services to add 4 cents per foot for miscellaneous expenses and to the meters, which form almost a separate department, requiring special shop and special experts for testing and repairing, 12½% for overhead charges.

1018 SECTION 6. Depreciation. As stated above depreciation of gas works arises from three causes: physical decay, obsolescence, and inadequacy. It will be perceived upon reflection that depreciation and repairs cannot be separated. The more thorough and prompt repairs of any manufacturing establishment may be the less is the residual allowance which will have to be made for residual depreciation on the books of the company. In some of our public service corporations, as, for instance, the Pennsylvania Railroad, the policy is to make repairs and replacements so thorough and so effective as to require no allowance whatever for depreciation in figuring the operating cost at the end of the year. In other cases of thorough repairs some agreed upon depreciation covering obsolescence and inadequacy is always made at the end of the year.

Referring now more particularly to the gas works. The cast iron street main system has been much discussed amongst engineers, and finally nearly all appear to be agreed upon the fact that a cast iron pipe in the streets has never been found, except under extraordinary conditions, to perish from physical decay.

The repairs to cast iron mains arise almost wholly from accidents and from replacements demanded by the conditions of the street works or the increase of business, and in case the size of the mains is enlarged the cost of the smaller mains is charged to repairs and the cost of the larger mains, less the cost of the smaller mains, is charged to capital account.

We have no reason to believe that a cast iron system of mains will become obsolete, and I have above explained how inadequate mains replaced by larger mains are dealt with.

In the matter of meters there is a rapid depreciation which, for the sake of avoiding slow meters and a great loss to the company in gas bills, require close attention. It has become generally
1019 the belief that seven years reaches the average life of a meter in good condition for measuring, with ordinary attention to its repairs, and after such service it should be removed and before being used again subjected to such thorough repairs and renewal of parts as will approximate the cost of a new gas meter.

The average useful life of a gas holder is taken at about forty years. The average useful life of a wrought iron street main service is about fifteen years under ordinary conditions. By means of dipping services in a tarry or asphalt compound it has been found possible to add very much to the life of services, and this is practiced of recent years in all well managed gas works.

Referring now more particularly to the commercial methods of dealing with depreciation. After the life is fixed for any item of a gas works provision can most simply be made for its ultimate replacement by annually setting aside the average amount of its depreciation based on the best judgment of gas engineers.

Instead of creating a fund commonly known as a sinking fund, the Massachusetts Gas Commission has heretofore permitted a direct charge for depreciation to the profit and loss account, and a reduction of the fixed assets by a corresponding credit or credits to the various fixed investments of the company.

It will be perceived from this that the cash value of these depreciations is left in the bank to be drawn upon for whatever purposes the company may deem it necessary to use money.

Because of the fact that the profit is usually greater on extensions of plant than the profit which could be derived from investments in bonds or other securities, most of the Massachusetts companies do not create a depreciation fund, but use the money to extend
1020 the plant, as their repairs are generally very thorough and few actual replacements are required. This depreciation money used for the extension of plant appears in future balance sheets as surplus over and above capitalization of these public service corporations which are not allowed to issue any stock or security for which par is not paid, and they sometimes are obliged to pay a premium on new issues ranging from fifty to one hundred per cent. as decided by the Commission after a careful investigation of the finances of the company applying for new stock.

SECTION 7. Inventory page 16; Des Moines Gas Company; Purifying House #1 A & B.

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Erected 1892, brick, slate roof, monitor ventilator, concrete foundations and floors.

Oxide conveyor 1906—Elevator disused, roof trusses wood.

	Structural cost.	Present value.
Contract Price	$6,904.92	
Overhead charges 12½%	863.12	
Structural Cost	7,768.04	
Depreciation 18 yrs. 25% (Somers	1,942.01	
		5,826.03
Area — "A" = (101'-4" x 30'-9") =	3,116,00 sq. ft.	
" — "B" = (12'-4" x 11' 3") =	139.00 sq. ft.	
Total area A & B	3,255.00 sq. ft.	

The new structural cost per sq. ft. is $2.39.

From the data furnished in Gas Company's Investory, page 18, the number of bricks in foundation calculated on a basis of 21 bricks per cu. ft. is 3,990. Figured on the basis of 17.7 bricks per cu. ft. as obtained from actual measurements, the number of bricks is 3,370, or an excess of 18% in company's figures.

In case of walls the number of bricks given by company is 233,-932. Corrected figures give the number as 183,160. This
1021 makes an excess of 28% in company's figures. The explanation of this excess is that the company has taken 7½ bricks per sq. ft. wall area in case of a wall of 4" thickness, 22½ bricks per sq. ft. wall area for a 13" wall and 30 brick to a 17" wall; whereas figures based on actual measurements taken from the building itself give 5 2/3 bricks per sq. ft. wall area for 4" wall, 18.4025 per sq. ft. wall area for 13" wall thickness and 24.0925 bricks for 17" wall.

NOTE—Contractor Jas. Maine's figures for the masonry work on Purifying House was $5,223.27.

SECTION 8. Inventory page 25, Des Moines Gas Company. Contents of Purifying House #1 A & B.

		Structural cost.	Present value.
Steam Hyd. Elevator (Obsolete		$500.00	$50.00
Bricket Oxide Conveyor ht. 40 ft. 5 x 6 vert. engine (1905)	1,500.00		
Overhead charges 12½%	187.50		
		1,687.00	
Structural Cost	1,687.50		
Depreciation 5 yrs. 5% 25%	421.87		
			1,266.00

		Structural cost.	Present value.
4 C. I. Purifying Boxes 20 x 20 x 7′ including covers hoist centre seal valves and conn. 1893.....	16,000.00		
16 inch C. I. pipe erected 327 ft. @ $2.10.....	687.00		
16 inch valves 2 @ $74....	148.00		
Contract price.....	16,835.00		
Overhead charges 12½%....	2,108.37		
	18,943.37	18,943.00	
Depreciation 17 yrs. 2% 34%	6,440.00		12,503.00
Totals		$21,130.00	$13,819.00

1022 SECTION 9. Inventory page 26, Des Moines Gas Company; Fire Brick Shed #1 C.

Erected 1909. Brick foundation, corrugated iron walls and roof; steel members. Dirt floor.

	Structural cost.	Present value.
Contract price.....	74.46	
Overhead Charges 12½%.....	9.31	
Structural Cost.....	83.77	
Depreciation 1 yr. 2%.....	1.68	
		82.09

Area = (19′-0″ x 12′ 0″) = 228 sq. ft.

Structural cost per sq. ft. new is 37¢.

This shed consists merely of two walls and roof made of corrugated iron fastened to light steel members. The walls of brick buildings No. 1 A & B (Purifying House) are used to close in the other two sides of the brick shed.

There is an excess of 23½% in the number of bricks given by the company on account of figuring 21 instead of 17 brick to the cu. ft. obtained from actual measurements.

SECTION 10. Inventory page 28, Des Moines Gas Company; Meter, Governor, Exhauster and Wash Room #3.

Erected 1876*a*. Brick and wood, 1st story and basement partitioned into 4 parts A, B, C, D. Foundations of rubble stone in cement mortar. Walls of brick in lime mortar. Roof of slate on rough boards supported on wood trusses. "Star" type ventilators. Floor of division A basement is concrete on earth; 1st floor concrete on matched boards. Floor of division B basement is dirt; 1st floor concrete on matched boards and C. I. plates. Floor of divisions C & B basement of brick flat. 1st floor of double matched boards.

COPY BOUND C

1023

	Structural cost.	Present value.
Contract Price	5,129.60	
Overhead charges 12½%	641.20	
Structural Cost	5,770.80	
Depreciation 34 years 63% (Somers)	3,635.60	
		2,135.20

Area = (98'-6' x 29'-4") = 2,886 sq. ft.
Structural cost per sq. ft. new is $2.00.

The company has figured 25¾ ½ more bricks in the walls, than actual figures, based on measurements taken at site of buildings, give. The cause of this excess is the company has assumed 7½ bricks per sq. ft. area of walls 4" thick and 22½ bricks per sq. ft. area of walls of 13" thickness, whereas actual measurements give 5 2/3 bricks per sq. ft. area for 4" wall and 18.40 bricks per sq. ft. area for a 13" wall. In the case of the brick emplacements the excess is 26%, caused by assuming 15 bricks per sq. ft. area for wall 8" thick instead of taking 12 bricks, as actually figured from measurements taken from building.

The buildings generally are in poor condition and walls ready to fall down. Brace, truss and tie rods prevent walls from falling down.

SECTION 11. Inventory page 41; Des Moines Gas Company; Contents, Meter, Governor, Exhauster and Wash Room, Building 3.

Items.	Structural cost.	Present value.
Foundation excavation	$10.00	
Brick and concrete 162 cu. yds. @ $7.00	1,134.00	
Laboratory Apparatus	2,000.00	
2 eight ft. station meters	4,000.00	
1 Connelly 16" Governor 1896	1,100.00	
1 Connelly 24" Governor 1903	1,600.00	
Toiley Fixtures	100.00	
1024 1 Safety blow back and drip pump	400.00	
16 inch #8 Wilbraham Green Exhauster and N. Y. Safety engine 1909	1,500.00	
16 inch 2 #7 Root Exhauster and 2 N. Y. safety engines 1909	2,300.00	
8 inch 2 #5 Wilbraham Green pushers and 2 N. Y. Safety engines 1906	2,000.00	
One P. & A. tar extractor 1905	750.00	
Work bench and vise	15.00	
Bath tub and lavatory furnishings	550.00	
Buffalo Duplex Fire pump 7½ x 5 x 8	200.00	
Warren Duplex Pump 10 x 6 x 10	300.00	
Vertical Pump	150.00	

	Structural cost.	Present value.
Piping and Valves:		
8″ 188 ft. @ $1.86	350.00	
10″ 166 " @ 2.50	415.00	
16″ 364 " @ 4.20	1,529.00	
20″ 19 " @ 5.80	110.00	
24″ 48 " @ 7.20	346.00	
(Double rates covering valves etc. $1,375)		
Total contract cost new.....	$20,859.00	
Drawings, supervision, general management, interest and taxes 12½%.....	2,607.00	
Total structural cost.....	23,466.00	
Depreciation inspection 25%.....	5,866.00	
		$17,600.00

Average age 6 years.

SECTION 12. Inventory page 43. Des Moines Gas Company; Retort, Generator, Engine and Blower House #4.

Erected 1876. Three divisions A, B, C. Division A and C one story construction. Division B of two story construction. Foundations of rubble stone in cement mortar, Brick walls, lime mortar. Roof of A & B is of corrugated iron on steel pipe with wood members. Monitor of steel. Floor of A is dirt. Floor of B brick laid flat, operating floor is made of C. I. plates. Floor of C is brick laid flat.

1025

	Structural cost.	Present value.
Contract Price.....	$3,255.78	
Overhead charges 12½%.....	406.97	
Structural Cost.....	$3,662.75	
Depreciation 34 yrs. Insp. 67% (Somers 63)	2,454.04	
		$1,208.71

Area A & B (84′-1″ x 31′-8″) = 2,663.5
" C (28′-8″ x 13′-4″) = 382.3

Total area A B and C.... 3,045.8 Sq. ft. say 3,046.

Structural cost per sq. ft, new is $1.20.

The Company's figures show an excess of 25½% in the number of bricks over the quantity obtained from actual measurements taken at the building. This difference comes from assuming 7½ bricks per sq. ft. wall area in a 4″ wall, 15 bricks for 9″ wall and 22½ bricks in 13″ wall; whereas corrected figures give 5 2/3 bricks per sq. ft. area for a 4″ wall, 12 bricks for 9″ wall and 18.4 bricks to a 13″ wall.

COPY BOUND CL

The steel roof supports, roof and monitor are practically scrap iron; the building in general is about ready to tumble down, so that a depreciation of 67% is a reasonable figure on its present condition.

SECTION 13. Inventory page 52. Des Moines Gas Company Contents Retort House, Generator, Engine and Blower House #4.

Items.	Structural cost.	Present value.
Excavation 32 cu. yds. @ 35¢	$11.00	
Foundations 34 " " @ $7.00	238.00	
2 sets Lowe Water Gas Apparatus		
1026 installed 1887	.....	
2 Generators 6 ft. diameter	.....	
2 Carburetters 6 " "	.....	
2 Superheaters 6 " "	.....	
2 Washers 4 " "	.....	
1 Scrubber 4 " "	.....	
1 Condenser 5 " "	.....	
2 engines for blowers	.....	
2 #6 Sturtevant Blowers	.....	
Oil Tank, sealpots, oil heater, superheater stacks, fire brick linings, oil measuring system, gauges, coal buggies, fire tools, tar separators, belting, blast piping, counter shaft, boilers, chimney stack, complete cast iron connections, cast iron floor, steeal beams, floor plates, columns, railings and stairway 2 sets complete @ $8,000.00	$16,000.00	
Total contract cost water gas apparatus	16,249.00	
Over-head charges 12½%	2,031.12	
	$18,280.12	
Depreciation 23 yrs. at 2½%, 58%	10,602.00	
		$7,678.00
Coal gas apparatus, 1900, 5 benches 6 retorts at $2,000.00	10,000.00	
Depreciation 90%	9,000.00	1,000.00
Total structural cost	$28,280.00	
Present Value		$8,678.00

1027 SECTION 14. Inventory Page 53. Des Moines Gas Company Coal Shed, Scrubber and Condenser Room #5 A. & B. Erected in 1876. Two divisions A and B. One Story construction. Foundations of rubble stone in cement mortar. Walls of brick, lime mortar; corrugated iron roof. Division A has monitor of wood, roof of tin. Floor of A is of brick laid flat. Floor in B is of boards. Building contains openings but no doors.

SE IN CENTER

	Structural cost.	Present value.
Contract Price	$1,445.08	
Overhead charges 12½%	180.64	
Structural Cost	$1,625.72	
Depreciation 34 yrs. 38% (Somers)	617.79	
		$1,007.93

Area A (19′ 3″ x 29′-11″) = 575.75
Area B (54′-0″ x 19′- 3″) = 1039.50

Total area A and B 1615.25 sq. ft.

The new structural cost per sq. ft. is $1.07.

The Company has used 25% more brick than the number actually contained from measurements taken from building.

The bricks in the condenser room are in a poor condition, actually crumbling away in certain portions. The other buildings, however, appear to be in a fair condition.

SECTION 15. Inventory Page 58. Des Moines Gas Company Contents Coal Shed, Scrubber and Condenser Rooms #5.

Items.	Structural cost.	Present value.
Excavation 9 cu. yds. at 35¢	$3.00	
Foundations brick 14500 or 31.6 cu. yds. @ $7.00	221.00	
Concrete, 2 cu. yds. @ $7.00	14.00	
150 ft. industrial railway @ 50¢	75.00	
Turntable—1000 lbs. @ 10¢	100.00	
Charging cars—2 at $100	200.00	
1028		
Total contract price	$613.00	
Drawing and supervision, general management, interest and taxes 12½%	77.00	
Total structural cost	$690.00	
Depreciation by inspection 50%	345.00	
		$345.00

Building 5 A contains part of the old (1887) 6 ft. Water Gas Set, and is now partially used as a coke bin, with rough wooden partitions.

Building 5 B is used as a coal dump for steam coal. The industrial railway above being used to carry coal to boilers.

SECTION 16. Inventory Page 59. Des Moines Gas Company Boiler and Engine Rooms—Building #6 A and B.

Erected 1902, of brick and steel construction, one story high, foundations of concrete and brick, walls of brick in lime mortar, floors of concrete on earth, roof of slate on steel purlins and trusses.

COPY BOUND CLOS

	Structural cost.	Present value.
Contract Price	$4,927.05	
Overhead charges 12½%	615.88	
Structural Cost	$5,542.93	
Depreciation 17% 8 yrs. (Somers)	942.30	
		$4,600.63

Area 2,831 sq. ft.
Structural cost per sq. ft. $1.958.
Gas Company's estimate of brick 27.45% above actual number.

Inventory Page 68. Boiler House Extension—Building #6 C. Erected 1909, of brick and steel construction, one story high, foundations of concrete and brick in cement mortar, North and West walls of brick in cement mortar, East wall of structural steel covered with corrugated iron, floor of brick cement grouted, 1029 roof of corrugated iron on steel purlins, and trusses.

	Structural cost.	Present value.
Contract Price	$893.00	
Overhead charges 12½%	111.62	
Structural Cost	1,004.62	
Depreciation 3% 1 yr. (Somers)	30.14	
		$974.48

Area 572 sq. ft.
Structural cost $1.756. per sq. ft.

SECTION 17. Inventory Page 74. Des Moines Gas Company Generator House #7.

West portion was erected in 1902, extended in an easterly direction in 1909. Brick and steel construction, two stories high. Concrete foundations. North, south, and west walls of brick. East wall of temporary construction, corrugated iron and wood framing. Roof of west portion of slate, steel trusses. Steel monitor. First floor concrete and brick laid flat. Second floor of cast iron plates, steel supports. Stairs of structural steel and wood.

	Structural cost.	Present value.
Contract price as per Co.'s inventory	$8,449.78	
Less structural cost of C. I. floors, stairs, etc., for generators	1,718.22	
Corrected contract price	$6,731.56	
Overhead charges 12½%	841.44	
Structural cost new	$7,573.00	
Depreciation 4 yrs. 8% (Somers)	605.84	
		$6,967.16

Area—(63′ 0″ x 63′ 0″) = 3969 sq. ft.
The structural cost per sq. ft. area new is $1.91.
The Company has an excess of 30% in their number of bricks over that obtained from figures based on building measure-
1030 ments. The building appears to be in good condition.

SECTION 18. Inventory Page 66. Des Moines Gas Company. Contents, Boiler and Engine Room #6 A and B.

Items.	Structural cost.	Present value.
Excavation—68 cu. yds. @ 35¢	$24.00	
Concrete cu. yds. @ $7.00	364.00	
Brick—2.93 cu. yds. @ $7.00	21.00	
Rest of machinery complete contract.		
Boiler House Extension #6 C. Inventory Page 73.		
Excavation 15 cu. yds. @ 35¢	5.00	
Foundations 16 cu. yds. @ $7.00	112.00	
125 H. P. Phoenix Boiler and stack erected	2,500.00	
Inventory Page 83. Generator House #7.		
Foundations brick 6176 cu. ft.		
" concrete 2935 cu. ft.		
" total 9111 cu. ft.		
337.5 cu. yds. @ $7.00	2,302.00	
One 10′ 6″ Lowe Water Gas Set complete		
Two 8′ 6″ Lowe Water Gas Sets complete.	50,000.00	
	$55,388.00	
Drawing and supervision, general management, interest and taxes 12½%	6,923.00	
		$62,311.00

No depreciation.

SECTION 19. Inventory Page 84. Des Moines Gas Company Coal or Coke Shed Building #8 A.

Erected 1896. Frame construction on brick foundations. One story high, and excavated to a depth of 8 ft. below ground level. Plank walls; tar felt and gravel roof. Floor of tar and breeze.

	Structural cost.	Present value.
1031 Contract Price	$4,223.45	
Overhead charges 12½%	527.93	
Structural Cost	$4,751.38	
Depreciation 14 yrs. 31% (Somers)	1,472.93	
		$3,278.45

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Area (75′ 0″ x 75′ 0″) 5625 sq. ft.
The new structural cost per sq. ft. is 84½%.
The company uses 23½% bricks more than the actual number.
The height of the brick wall is so low that a regularly constructed scaffold is unnecessary, merely a few planks supported on horses, being sufficient for the masons to stand on.
A portion of the west wall of building has not been painted.

Inventory page 88. Runway and coal or coke shed—Building #8 B.
Erected in year 1901. Frame construction, on steel and wood members. Walls of corrugated iron on wood framing, corrugated iron roof. Plank floor.

	Structural cost.	Present value.
Contract Price	$318.59	
Overhead charges 12½%	39.82	
Structural cost	358.41	
Depreciation 9 yrs. 23% (Somers)	82.43	
		$275.98

Area 404 sq. ft.
The structural cost per sq. ft. area is 89¢.
The box cornice given on page 89 of inventory is of the crudest construction, consisting merely of a plain bottom and side piece of ordinary planking.

SECTION 20. Inventory Page 87. Des Moines Gas Company. Contents, Coal or Coke Shed #8 A.

Items.	Structural cost.	Present value.
Fairbanks Standard Scales 5 x 6 ft. platform—price	$300.00	
Overhead charges 12½%	38.00	
1032 Structural cost	$338.00	
Depreciation, inspection 50%	169.00	
		$169.00

Building 8 A used for the storage of coke is a cellar subject to overflow during periods of high water.

SECTION 20 A. Inventory Page 91. Des Moines Gas Company. Contents, Runway and Coal Shed #8 B.

Items.	Structural cost.	Present value.
Steam Hyd. elevator lifting coke from cellar to operating platform 16′ 9″—Price	$1,500.00	
Drawing, supervision, general management, interest and taxes 12½%	197.00	
Total structural cost	$1,697.00	
Depreciation inspection 67%	1,131.00	
		$566.00

This elevator operates badly and is much worn.

SE IN CENTER

SECTION 21. Inventory Page 92. Des Moines Gas Company Smith, Carpenter Shop and Storeroom—Building #10.

Building erected 1876, of brick and wood construction, one story high, foundations of concrete and brick in cement mortar, walls of brick in cement mortar, floors of concrete on earth, and brick grouted with cement.

	Structural cost.	Present value.
Contract Price	$5,850.50	
Overhead charges 12½%	731.31	
Structural cost	$6,581.81	
Depreciation 38% (Somers 34 yrs.)	2,501.09	
		$4,080.72

Area 6,446.6 sq. ft.

Structural cost per sq. ft. $1.021.

The Gas Company's estimate of quantities gives 21 bricks per cu. ft. while an actual measurement gives 16.53 an overestimate on their part of 27%.

1033 This building has been repaired and painted, its brick work is rough, its roof covered with tin and repaired with tar felt, is out of line and generally in bad condition; its present value appears very small save for the fact that it can be used.

SECTION 22. Inventory Page 103. Des Moines Gas Company. Contents, Smith, Carpenter Shop and Store Room. #10.

Foundation:

	Structural cost.	Present value.
Concrete 1 cu. yd. @ $7.00	.....	7.00
Brick 68 " " @ 1.6¢	.....	1.00
Buffalo Forge and 5 H. P. engine	$200.00	
Drill press,	100.00	
Screw cutting lathe,	300.00	
Grind stone and emery wheel,	15.00	
Smith's Forge	25.00	
2 Anvils,	20.00	
2 bench vises,	10.00	
Pipe vise,	7.00	
Heater for soldering,	3.00	
Screw cutting machine,	150.00	
Counter shafting, etc.	100.00	
		930.00
Purchase price,		938.00
Overhead charges 12½%		117.00
Structural cost,		1,055.00
Depreciation (inspection) 50%		527.00
Present value,		528.00

None of this apparatus appeared new or very carefully kept.

COPY BOUND CLOS

SECTION 23. Inventory Page 104. Des Moines Gas Company. Barrel Oil Store House #11.

Erected in 1909. One story concrete structure. Foundations and floor of concrete. Reinforced concrete walls and roof. Batten doors, metal sheathed.

		Structural cost.	Present value.
1034	Contract Price	$183.00	
	Overhead charges 12½%	22.88	
Structural cost		$205.88	
Depreciation for 1 yr. 2% (Somers)		4.12	
			$201.76

Area—(10′ 11″ x 15′ 11″)—176
2 (8′ 2″ x 3′ 7″) =58.8
Total area is 234.8 sq. ft.
The new structural cost per sq. ft. is 86¢.
The company uses 31½% more bricks in the 4″ wall than actual figures give.

NOTE—The Company does not specify the quantity or form of reinforcement in this building, nor does it appear in the sketches of said building,. Building in general is in a substantial condition.

SECTION 24. Inventory Page 108. Des Moines Gas Company. Pump House, Building #12. Erected 1910 of brick, steel and concrete construction, one story high, foundations of concrete and brick in cement and mortar, walls of brick in lime mortar, roof of reinforced concrete on steel purlines, floors of concrete on cinders.

	Structural cost.	Present value
Contract price	$597.67	
Overhead charges 12½%	74.71	
Structural cost	$672.38	
Depreciation, none		$672.38

Area 308 sq. ft.
Structural cost per sq. ft. $2.18.
Gas Company's estimate of brick nearly 22% above actual number.

SECTION 25. Inventory Page 111. Des Moines Gas Company. Contents, Pump House #12.

8 small steam pumps
2 water pumps.
1035 2 oil pumps
2 tar pumps
2 drip pumps

OSE IN CENTER

	Structural cost.	Present value.
Average price 8 @ $200.00	$1,600.00	
Overhead charges 12½%	200.00	
Structural cost	$1,800.00	
Depreciation 5 yrs. at 5% (25%)	450.00	
		$1,350.00

SECTION 26. Inventory Page 114. Des Moines Gas Company. Oil Pump House, Building #13. Erected 1907, remodeled 1909. of brick construction one story high, foundation of concrete and brick in cement mortar, walls of brick and lime mortar, roof of slate on steel pipe, floor of concrete on earth.

	Structural cost.	Present value.
Contract price	$128.55	
Overhead charges 12½%	16.07	
Structural cost	$144.62	
Depreciation 3% (Somers)	4.34	
		$140.28

Area 121 1/8 sq. ft.
Structural cost per sq. ft. $1.194.
Gas Company's estimate of brick 27% above actual number.

SECTION 27. Inventory Page 115. Des Moines Gas Company. Contents, Pump House #13.

Excavation ½ cu. yd.

	Structural cost.	Present value.
Foundation 465 brick @ 1.6¢	$8.00	
One Davidson 6" x 8" x 12" Pump	500.00	
Contract price,	508.00	
Overhead 12½%	63.00	
Structural cost	$571.00	
Depreciation inspection 20%	114.00	
Present value		$457.00

1036 SECTION 28. Inventory Page 116. Des Moines Gas Company. Meter House #14. Erected in 1909. One story construction of bricks, steel and concrete. Brick and concrete foundations. Brick walls, reinforced concrete roof on steel purlines. Star Type ventilator. Concrete floor on brick edge.

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	Structural cost.	Present value.
Contract price	$1,104.32	
Overhead charges, 12½%	138.04	
Structural cost	$1,242.36	
Depreciation for 1 yr. 2% (Somers)	24.85	
		$1,217.51

Area (28′ 8″ x 20′ 8″)=594 sq. ft.
Structural cost per sq. ft. new is $2.09.
The Company's estimate for brick is 15% over the actual number.

SECTION 28. Inventory Page 120. Des Moines Gas Company. Contents, Meter House #14.

	Structural cost.	Present value.
Excavation 25 cu. yds. @ 35¢	$8.75	
Foundations 6 " @ 7.00	42.00	
Brick 3,713 @ 1.6¢	59.41	
Station meter—14 ft. diameter, 14 ft. long (1909) installed	8,500.00	
Cast iron piping (Double price)	.....	
25″ pipe 28 ft.	.....	
24″ tees—3 at 6 ft. 18 ft.	.....	
24″ bends—3 at 4 ft. 12 ft.	.....	
58 ft. @ $7.20	417.60	
24″ valves—3 @ $150.	450.00	
Contract price	$9,477.76	
Overhead charge 12½%	1,184.72	
Structural cost	$10,662.48	
Depreciation, none.		
Present value		$10,662.00

This meter appears to be quite new.

1037 SECTION 30. Inventory Page 121. Des Moines Gas Company. Stable, Building #15. Division- A and B erected 1897, Division C erected 1883, all of frame construction on brick foundations. A and C of one story construction, B of two story construction; roof of A and B of rubberoid on rough boards and wood rafters, roof of C of shingle on rough boards and wood rafters; floor of A concrete on earth; of B plank on wood joist; of C concrete and brick.

	Structural cost.	Present value.
Contract price	$1,327.41	
Overhead charges 12½%	165.93	
Structural cost	1,493.34	
Depreciation	576.93	
		$916.41

E IN CENTER

Depreciation is figured 45% of $859.54 for division C or $386.79 and 30% of $633.80 for division- A and B or $190.14, making a total of $576.93.

Gas Company's estimate of brick is 23.5% above actual number.

SECTION 31. Inventory Page 127. Des Moines Gas Company. Boiler House #16. Erected in 1906. Building of structural steel and galvanized iron. One story high. Concrete foundations. Corrugated iron walls and steel framing. Corrugated iron roof on steel purlins. Skylights of wire glass on wooden frame. Floor partly cement and partly cinder. Metal sheathed batten doors.

	Structural cost.	Present value.
Contract price	$558.94	
Overhead charges 12½%	69.87	
Structural cost	$628.81	
Depreciation 4 yrs. 10% (Somers)	62.88	
		565.93

Area—(40′ 4″ x 14′ 3″) 576.7 sq. ft.

Structural cost per sq. ft. area new is $1.09.

1038 The 64.68 sq. ft. of windows given on page 128 of inventory, judging from the sketches, are merely wooden shutters.

SECTION 32. Inventory Page 129. Des Moines Gas Company. Contents Boiler House #16.

Items.	Structural cost.	Present value.
Excavation 12 cu. yds. at 35¢	$4.20	
Foundations 8,29 cu. yds. at $7.00	58.03	
Slab concrete, 278 sq. ft. at 13¢	36.14	
Floor brick 278 sq. ft. at 13¢	36.14	
One 60 H. P. Hor. Tub. Boiler, 54″ in diameter, 16′ long, brick setting smoke stack and injector 60 H. P. at $20	1,200.00	
Contract price	$1,334.51	
Drawing, supervision, general management, taxes and interest, 12½%	166.81	
Structural value	$1,501.32	
Depreciation 4 yrs. 7%—28%	420.37	
		$1,080.95

This boiler stands in temporary structure in the holder yard and is used for heating seals of gas holders.

SECTION 33. Inventory Page 130. Des Moines Gas Company. Fire Brick Storage, Building #17. Erected 1905, of one story frame construction on wood sills, roof of tar felt on rough boards and wood rafters.

COPY BOUND CLO

	Structural cost.	Present value.
Contract price	$98.40	
Overhead charges	12.30	
Structural cost	$110.70	
Depreciation 55%	60.88	
		$49.82

Area 395.4 sq. ft.
Structural cost per sq. ft. $0.28.

1039 SECTION 34. Inventory Page 132. Des Moines Gas Company. Fire Hose House #35. Erected in 1905. One story frame structure. Walls of matched boards on wood studding. Roof of tar on matched boards on wood rafters. Dirt floor. Batter

	Structural cost.	Present value
Contract price	$23.93	
Overhead charges 12½%	2.99	
Structural cost	26.92	
Depreciation 5 yrs. 15% (Somers)	4.04	
		$22.88

Area (7′ 3″ x 6′ 4″)—46 sq. ft.
Structural cost per sq. ft. new is 58½.

SECTION 35. Inventory Page 134. Des Moines Gas Company. Coke Shed. Building #53. Erected 1887, of frame construction, on brick piers, walls of vertical boards stripped. Roof of shingles on wood sheathing and wood rafters.

	Structural cost.	Present value.
Contract price	$464.74	
Overhead charges 12½%	58.09	
Structural cost	$522.83	
Depreciation 90%	470.52	
		$52.31

Area—1,538 sq. ft.
Structural cost per sq. ft. $0.34.
Building rotted away and ready to fall down. Nobody would give $50.00 and take this building down for material.

SECTION 36. Inventory Page 154. Des Moines Gas Company. Coke Rack #54. Erected in 1907. Wood construction. Plank siding supported on posts imbedded in ground.

	Structural cost.	Present value.
Contract price	$58.49	
Overhead charges 12½¢	7.31	
Structural cost	$65.80	
Depreciation 3 yrs. 15%	9.87	
		$55.93

OSE IN CENTER

1040 Area (72′ 0″ x 54′ 4″) ..... 3,912 sq. ft.
Less (7′ 3″ x 25′ 0″) ..... 181 " "

Corrected area ..... 3,731 " "
Structural cost per sq. ft. area new is 1.8¢.

SECTION 37. Inventory Page 195. Des Moines Gas Company. Oil Barrel Store House #55. Erected in 1906. One story frame structure. Rubble stone piers. Walls of slat construction on wood studding. Tar felt roof on rough boards, wood rafters. Rough board floor on wood joists. Batten door.

	Structural cost.	Present value.
Contract price	$47.26	
Overhead charges 12½%	5.91	
Structural cost	$53.17	
Depreciation by inspection 50%	26.59	
		$26.58

Area (20′ 0″ x 10′ 0″)—200 sq. ft.
Structural cost per sq. ft. new is 26½¢.

This building is of the crudest form of construction, made up chiefly of wreckage material, so that 50% is a reasonable depreciation on its present condition.

SECTION 38. Inventory Page 200. Des Moines Gas Company. Rubbish Kiln #59. Erected in 1909. Brick construction, conical shape.

	Structural cost.	Present value.
Contract price	$20.60	
Overhead charges 12½%	2.58	
Structural cost new	$23.18	
Depreciation by inspection 50%	11.59	
		$11.59

This structure is in a bad condition so that 50% is a fair depreciation, judging from its present condition.

SECTION 39. Inventory Page 164. Des Moines Gas Company. Works Paving. Laid at various dates covering a period of eighteen years, consists of concrete on cinder, brick on sand and creo-
1041 sote blocks on concrete base.

	Structural cost.	Present value
Contract price	$1,292.26	
Overhead charge 12½%	161.53	
Structural cost	1,453.79	
Depreciation (by observation) 40%	581.52	
		$872.27

COPY BOUND CLO

The Gas Company's inventory includes 311 sq. yds. of brick sidewalk, 134 sq. yds. of cement sidewalk and 512 linear feet of curbing which does not lay within the limits of their property, but lays in the streets adjacent to their property. The same have therefore been omitted from this estimate.

Almost all of this paving is second or third class material and not worth the estimate except for use.

SECTION 40. Inventory Page 166. Des Moines Gas Company. Fencing and Gates. Erected at various dates covering a period of ten years, of picket construction on rails supported by posts embedded in the ground, gates are of the slide type, frame construction; 1,224 feet of 8 ft. fencing, 334 ft. of 6 ft. fencing, seven gates.

	Structural cost.	Present value.
Contract price	$1,190.13	
Overhead charges 12½%	148.77	
Structural cost	$1,338.90	
Depreciation (by observation) 15%	200.83	
		$1,138.07

SECTION 41. Inventory page 203. Des Moines Gas Company. Fencing and Gates on Leased Property. Date of erection not given. Fence of picket construction, gates of slide and swing type; 439 ft. of 8 ft. fencing, one swing gate and two slide gates.

1042

	Structural cost.	Present value.
Contract price	$335.35	
Overhead charges 12½%	41.92	
Structural Cost	$377.27	
Depreciation (by observation) 15%	56.59	
		$320.68

SECTION 42. Exhibit 1. No page. Des Moines Gas Company.

	Structural cost.	Present value.
Main office furniture:		
The purchase price is	$8,324.20	
Overhead charges 12½%	1,050.53	
Structural cost new is	$9,364.73	
Depreciation 10%	936.47	
		$8,427.26
Works office furniture:		
Purchase price is	$153.00	
Overhead charges 12½%	19.13	
Structural cost new is	$172.13	
Depreciation 50%	86.07	
		$86.06

OSE IN CENTER

Third and Vine Streets office furniture:		
Purchase price is	$371.05	
Overhead charges 12½%	46.38	
Structural cost new is	$417.43	
Depreciation 50%	208.72	
		$208.71
		$8,722.08

I consider these totals to be fair valuations of the contents of the several offices, based on the data and description given in the company's inventory and personal inspection upon two or more occasions of above premises.

My basis of prices is from catalogues and data gathered from other plants of similar character.

1043 SECTION 43. Inventory page 188. Des Moines Gas Company. Electric wiring. This wiring placed in Meter House, Boiler House, Stable, Purifying House, Exhaust Pump House, Condenser and Generator House is of the simplest character.

Items.	Structural cost.	Present value.
49 lamp outlets at 2.50	$120.50	
907 ft. conduit at 5¢	45.35	
Contract cost	$165.85	
Overhead 12½%	20.73	
Structural cost	$186.58	
Depreciation—inspection—25%	46.65	
		$139.93

This wiring is done where danger from an open flame exists.

SECTION 44. Inventory page 138. Des Moines Gas Company. Relief Holder #18. Capacity 175,000 cu. ft. One gas holder brick tank and appurtenances.

	Structural cost.	Present value.
Iron columns old style. 2 lifts. 175,000 cu. ft. at $175 per M	$30,625.00	
Overhead charge 12½%	3,828.00	
Structural cost	$34,453.00	
Depreciation 28 yrs. at 2½%—70%	24,117.00	
Present Value		$10,336.00

This holder, erected 1882, appears to have 10 or 12 more years of life when it will have to be abandoned. Being used for relief purposes it has had and will have severe usage.

Being small and old fashioned its structural cost exceeds that of a new steel tank holder of equal capacity today.

The books of the Des Moines Gas Company appear to have a charge of $33,356.00 to this holder.

1044 SECTION 45. Inventory page 140. Des Moines Gas Company. Storage Holder #19.

One 2 lift telescopic gas holder brick tank iron columns old style 1892 300,000 cu. ft. at $150 per M.....	$45,000.00	
Drawing, supervision, general management, interest and taxes 12½%.....	5,625.00	
Structural cost	$50,625.00	
Depreciation 19 yrs. 2½%—47½%...	23,447.00	
Present Value		$27,178.00

The approximate contract cost $45,000 in 1892 of this holder would be much reduced if replaced by a steel tank holder of modern make. The $45,000 price covers with ample margin every appurtenance such as inlets and outlets and valves required by this holder. In my opinion the actual contracts in possession of the Des Moines Gas Company would prove less than $45,000.

The books of the Des Moines Gas Company appear to have charged $40,057.00 to this holder.

SECTION 46. Inventory page 142. Des Moines Gas Company. Storage Holder # 20 (1902).

	Structural cost.	Present value.
One telescopic 3 lift gas holder, steel tank hollow brick cover well foundations inlet and outlet guide columns 1,132,000 cu. ft. at $100 per M....	$113,200.00	
Overhead charges 12½%.....	14,150.00	
Structural Cost	$127,350.00	
Depreciation 8 yrs. 2½%—20%.....	25,470.00	
Present Value		$101,880.00

1045 SECTION 47. Inventory Page 143. Des Moines Gas Company. Oil Tank #21. Erected in 1902. Capacity 100,000 gallons. Steel tank in brick emplacements. Concrete foundations. Brick emplacement walls. Cement coping. Tank is of the submerged head type.

	Structural cost.	Present value.
Contract price	$4,180.74	
Overhead charges 12½%	522.59	
Structural cost new	$4,703.33	
Depreciation 20% (8 yrs.)	940.67	
		$3,762.66

Cubical contents 14,137 cu. ft.
The structural cost per cu. ft. new is 33¢.
The company's estimate of the number of brick is 21% in excess of the actual number.

SECTION 48. Inventory Page 145. Des Moines Gas Company. Oil Tank, Structure #22. Erected 1897, of steel in brick emplacements; foundations of concrete, emplacements walls of brick cement mortar. Capacity 64,000 gallons.

	Structural cost.	Present value.
Contract price	$2,475.19	
Overhead charges 12½%	309.40	
Structural cost	$2,784.59	
Depreciation 13 yrs. 32½%	904.99	
		$1,879.60

Cubic content of tank—8,620 cu. ft.
Structural cost per cu. ft. $.323.
Gas Company's estimate of brick 17.1% above actual number.

1046 SECTION 49. Inventory Page 147. Des Moines Gas Company. Tar Tank and Evaporator #23. The tank was erected in 1891. Steel tank in brick emplacements. Concrete foundations. Submerged head type. Capacity 10,000 gallons. The tar evaporator was erected in 1908. Steel construction.

Tar Tank:

	Structural cost.	Present value
Contract price	$919.45	
Overhead charges 12½%	114.93	
Structural cost new	$1,034.38	

Depreciation 19 yrs. 47½%.
Cubical contents is 2138 cu. ft.
Structural cost per cu. ft. new is 48¢.

Tar Separator:

Contract price	$50.40	
Overhead Charges 12½%	6.30	
Structural cost new	$56.70	
Depreciation 2 yrs. 5%	2.83	
		$53.87

COPY BOUND CLOS

Cubical contents is 80 cu. ft.
Structural cost per cu. ft. new is 67¢.
The tar tank was formerly used for oil storage purposes, but subsequently employed for storage of tar.
The Company has 22% more brick than the actual number.

SECTION 50. Inventory Page 150. Des Moines Gas Company. Oil Tanks, Structures #24 and #25. Erected 1907 and 1910. Of steel in brick emplacements, foundations of concrete emplacement walls of brick in cement mortar, tanks of the submerged head type, capacity 321,200 gallons each.

1047 #24.

	Structural cost.	Present value.
Contract Price	$7,326.22	
Overhead charges 12½%	915.78	
Structural cost	$8,242.00	
Depreciation 3 yrs. 7½%	618.15	
		$7,623.00

#25.

Contract price	$7,326.22	
Overhead charges 12½%	915.78	
Structural cost	$8,242.00	
Depreciation none		$8,242.00

Cubic content of tank 42940.5 cu. ft.
Structural cost per cu. ft. $0.192.
Gas Company's estimate of number of brick is 24.4% above actual number.

Structural cost 2 tanks	$16,484.00	
Present value 2 tanks		$15,865.00

SECTION 51. Inventory Page 190. Des Moines Gas Company. Fire Protection.

	Structural cost.	Present value.
Contract price	251.00	
Overhead charges 12½%	31.38	
Structural cost new	$282.38	
Depreciation 33⅓%	94.13	
		$188.25

SECTION 52. Inventory Page 194. Des Moines Gas Company. Fixures in Meter and Fitting Shop. Building #50. These consist of bins, shelves, partitions, meter trucks, elevator and engine, outfit for dipping meters and two meter provers.

OSE IN CENTER

1048

	Structural cost.	Present value.
Contract price	$686.00	
Overhead charges 12½%	85.75	
Structural cost new	$771.75	
Depreciation by inspection 33⅓ %	257.25	
		$514.50

SECTION 53. Inventory Page 153. Des Moines Gas Company. Oil Holder Oil Tank #36.

Tank erected in 1893. Steel tank resting on wood bents. Capacity 700 gallons.

	Structural cost.	Present value.
Contract price	$93.68	
Overhead charges 12½%	11.71	
Structural cost new	$105.*00*	
Depreciation 17 yrs. 42½%	44.79	
		$60.*00*

Cubical contents 102½ cu. ft.
Structural cost per ft. new is $1.02½.

SECTION 54. Inventory Page 197. Des Moines Gas Company. Holder Oil Tank #58. Erected in 1904. Steel Tank. Cinder foundation enclosed in wood framing. Capacity 9,500 gallons.

	Structural cost.	Present. value.
Contract price	$405.22	
Overhead charges 12½%	50.65	
Structural cost new	$455.87	
Depreciation 6 yrs. 15%	68.38	
		$387.49

Cubical contents 1272.4 cu. ft.
Structural cost per cu. ft. new is 36¢.

1049 SECTION 55. Inventory Page 158. Des Moines Gas Company. Wells, Valves Boxes, Tar Separators. Constructed at various dates covering a period of thirty-four years; consist of valve and junction boxes, sewer manholes, tar separators, water, tar, and blow-off wells, pipe conduit, and foundation and bulkhead for coke storage; constructed of wood, brick and concrete, with covers of wood, steel and cast iron.

COPY BOUND CLOS

Works, Yard:

	Structural cost.	Present value.
Contract price	$2,017.66	
Overhead charges 12½%	252.21	
Structural cost	$2,269.87	
Depreciation by observation 50%	1,134.93	
		$1,134.94

Three tar separators are mentioned in typewritten inventory, but only two are shown on plans.

Holder, Yard:

	Structural cost.	Present value.
Contract price	$565.33	
Overhead charge 12½%	70.67	
Structural cost	$636.00	
Depreciation, by observation 25%	159.00	
		$477.00

SECTION 56. Inventory Page 163. Des Moines Gas Company. Outside Apparatus Davidson Simplex Steam Pump. This pump was used in connection with the tar separator. Size 2" x 2½" x 4".

	Structural cost.	Present value.
Contract Price	$100.00	
Overhead charges 12½%	12.50	
Structural cost new	$112.50	
Depreciation by inspection 50%	56.25	
		$56.25

1050 Fairbanks Track Scales. Installed in 1890. Size of platform 7' 6" x 36' 0". Capacity 100 tons.

	Structural cost.	Present value.
Contract price	$1,500.00	
Overhead charges 12½%	187.50	
Structural cost new is	$1,687.50	
Depreciation 20 yrs. 90%	1,518.75	
		$168.75

The track scale is no longer in use, and the platform is in very poor condition.

Stiff Leg Derrick #62. Erected 1890. It is of the stiff leg type. Consists of mast, boom, bracing, band winch, necessary cable, sheaves and guy wires.

SE IN CENTER

	Structural cost.	Present value.
Contract price	$150.00	
Overhead charges 12½%	18.75	
Structural Cost new	$168.75	
Depreciation 20 yrs. 50%	84.38	
		$84.37

Standard Wagon Scales. Installed 1876. Platform is 8′ 0″ x 14′ 0″. Capacity is 2 tons. This scale was rebuilt in 1890.

	Structural cost.	Present value.
Contract price	$500.00	
Overhead charges 12½%	62.50	
Structural cost new	$562.50	
Depreciation 2 yrs. 10%	56.25	
		$506.25

The total net structural cost new of the outside apparatus is $2,531.25.

Summation.

Pump	$112.50	$56.25
Railway Scales	1,687.50	168.75
Derrick	168.75	84.37
Wagon Scales	562.50	506.25
	$2,531.25	$815.62

1051 SECTION 57. Inventory pages 168 to 183 and pages 204 to 207. Des Moines Gas Company. Small piping in yard and buildings. In order to facilitate an estimate of the structural cost of the small piping in yard and buildings and be on the safe side allowing to the company more than could by the use of any ordinary methods be expended, the following figures have been applied to wrought iron pipe throughout.

Ditch or erecting per lineal foot 10¢.

Pipe per lineal foot at the net price.

Fittings and labor up to 1¼″ per lineal foot 4¢; total 20¢ for 1¼″ pipe and the following figures for other sizes:

For	⅜″	pipe	16¢.
"	½″	"	17¢.
"	¾″	"	17¢.
"	1″	"	18¢.
"	1¼″	"	20¢.
"	1½″	"	21¢.
"	2″	"	23¢.
"	2½″	"	28¢.
"	3″	"	33¢.
"	3½″	"	38¢.

COPY BOUND CLO

At this point the constant is changed and the figures are as follows:

For 4" pipe 44¢.
" 5" " 58¢.
" 6" " 72¢.
" 8" " $1.15.
" 10" " 1.61.

The valves are computed separately although all other fittings and the cost of laying in the yard and of erecting inside the shops are provided for in the cost per foot.

1052 For ½" Valve 30¢.
" ¾" " 38¢.
" 1" " 54¢
" 1¼" " 76¢.
" 1½" " $1.05.
" 2" " 1.59.
" 3" " 4.32.
" 4" " 6.00.
" 5" " 7.50.
" 6" " 9.00.
" 8" " 16.50.

All valves below 3" in size were estimated as standard brass Glove valves and above 4" and larger were estimated as iron body gate valves.

In case of terra cotta piping the figures are as follows:

For 3" 35¢ per lineal foot laid.
" 4" 40¢ " " " "
" 6" 50¢ " " " "
" 8" 60¢ " " " "
" 12" 75¢ " " " "

The L's are included in the total price for pipe.
In the case of terra cotta pipe the L's are allowed as two feet long.
In the case of cast iron pipe the figures are:

4" @ 49¢ per lineal foot laid.
6" @ 69¢ " " " "
8" @ 93¢ " " " "

For pipe coverings the following prices were used:

1053 For coverings ⅜" 10¢ per lineal foot erected.
" " ½" 10¢ " " " "
" " ¾" 11¢ " " " "
" " 1" 12¢ " " " "
" " 1¼" 13½¢ " " " "
" " 1½" 15¢ " " " "
" " 2" 16¢ " " " "
" " 2½" 18¢ " " " "
" " 3" 20¢ " " " "
" " 3½" 22½¢ " " " "
" " 4" 27¢ " " " "
" " 6" 36¢ " " " "
" " 8" 50¢ " " " "

The price used for pipe covering on all pipe except magnesia on leased property leading to Building #50, is an average of two kinds, the character of the covering is not specified in the inventory, therefore to give the Gas Company the benefit of any doubt the price used in the average between the price of air cell covering and magnesia pipe covering. The price used for magnesia pipe covering where specified in the works yard leading to Building #50 is 13¢ per lineal foot for ¾" pipe erected and 16½¢ for 1¼" pipe erected.

As Company's attendants appear to be directed to answer no questions, merely pointing out the objects it was impossible to learn anything regarding buried pipes from inspection and in the case of overhead pipes it was also impossible to take coverings or material down as they were in use. In every case the computers of this small piping, Mr. C. A. Hasek and Geo. D. Dobson, were careful to allow more than sufficient margin in favor of the Des Moines Gas Company.

1054 SECTION 58. Inventory Page 168. Des Moines Gas Company. Water Piping.

		Structural cost.	Present value.
Wrought iron pipe	4603′ @ $.282	$1,297.24	
Valves	134 @ 1.682	225.41	
Cast iron pipe	44′ @ .581	25.56	
Cast iron specials		22.34	
		$1,570.55	
Depreciation 50%		785.27	
			$785.28

SECTION 59. Inventory Page 170. Des Moines Gas Company. Circulation Piping.

		Structural cost.	Present value.
Wrought iron pipe	608′ 11″ @	$286.25	
Terra cotta tile pipe	88′ @ 50¢	44.00	
Valves	13 @ $5.105	66.36	
		$396.61	
Depreciation 50%		198.30	
			$198.31

SECTION 60. Inventory Page 171. Des Moines Gas Company. Steam Piping.

		Structural cost.	Present value.
Wrought iron pipe	3779′ 6″ @ $.2497	$943.67	
Covering	3522′ 6″ @ .1563	550.65	
Valves	148 @ 1.86	275.22	
Steam hose	115′ 6″ @ .38	43.89	
		$1,813.43	
Depreciation 50%		906.71	
			$906.72

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1055 SECTION 61. Inventory Page 174 Des Moines Gas Company. Exhaust Steam Piping. From engines and pumps in meter, exhauster and engine room, condenser and engine room pump house, etc.

				Structural cost.	Present value.
Wrought iron pipe	3932' 1"	@	$.2254..	$886.39	
Valves	48	@	1.685 ..	80.87	
Radiators 16 sq. ft.			1.00....	16.00	
Covering	1673' 11"	@	.18 ..	299.88	
Exhaust heads	3	@	22.00 ..	66.00	
Steam traps	5	@	38.00 ..	190.00	
Separators	3	@	14.25 ..	42.75	
				$1,581.89	
Depreciation 50%				790.94	
					$790.95

SECTION 62. Inventory Page 177. Des Moines Gas Company. Oil Piping. From cars to storage tanks and from storage tanks to sets.

				Structural cost.	Present value.
Wrought iron pipe	1969' 0"	@	$.35....	$691.32	
Cast iron "	765' 0"	@	.93....	711.45	
Valves	41	@	3.70....	151.26	
				$1,554.03	
Depreciation 50%				777.02	
					$777.01

SECTION 63. Inventory Page 179. Des Moines Gas Company. Gas Piping. For lighting meter, governor exhauster and wash room, retort, generator engine and blower house, coal shed, scrubber and condenser room, boiler house, smith, carpenter shops and store room.

Gas piping 2500.19' @ $.17.....				$428.69	
Depreciation 50%				214.35	
					$214.34

1056 SECTION 64. Inventory page 180. Des Moines Gas Company. Tar Piping. From Tar Extractors and Separators to Pumps, Relief Holder and Tar Evaporator.

				Structural cost.	Present value.
Tar Piping	747' 0"	@	$ .30	$223.93	
Valves	3	@	3.97	11.91	
Plug cocks	3	@	1.83	5.50	
				$241.34	
Depreciation 50%				120.67	
					$120.67

SE IN CENTER

SECTION 65. Inventory page 181. Des Moines Gas Company. Drain Piping.

	Structural cost.	Present value.
Wrought iron pipe 1109′ 4″ @ $0.2129.	$236.12	
Terra Cotta tile 62′ @ 0.412 .	25.55	
Valves 28 @ 0.522 .	14.63	
	$276.30	
Depreciation 50%	138.15	
		$138.15

SECTION 66. Inventory page 183. Des Moines Gas Company. Sewer Piping. From yards, drains, stable and pumps to sewer.

	Structural cost.	Present value.
Terra Cotta tile 1534′ 0″ @ $ .564.....	$865.00	
Wrought iron pipe 126′ 0″ @ 1.216...	153.18	
Cast iron soil pipe 109′ @ .49.....	53.41	
	$1,071.59	
Depreciation 50%	535.75	
		$535.74

SECTION 67. Inventory page 204. Des Moines Gas Company. Gas piping, building # 50. Leased property. For lighting and supplying power to the elevator engine in Meter Repair Shop and Store room, Building #50.

	Structural cost.	Present value.
1057 Gas Piping 912.72′ @ $.176.....	$160.81	
Depreciation 50%	80.41	
		$80.40

SECTION 68. Inventory 205. Des Moines Gas Company. Steam Piping on Leased Property.

	Structural cost.	Present value.
Steam pipe 1730′ @ $0.1879.....	$325.09	
Valves 20 @ 0.671.....	13.42	
	$338.51	
Depreciation 50%	169.25	
		$169.26

Inside Building.

SECTION 69. Inventory page 206. Des Moines Gas Company. Steam Piping on Leased Property.

	Structural cost.	Present value.
Steam Pipe 572′ @ $0.1957.....	$111.94	
Magnesia covering 331 @ $0.163.....	53.94	
Boxing	10.21	
	$176.09	
Depreciation 50%	88.04	
		$88.05

In yard.

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SECTION 70. Inventory page 207. Des Moines Gas Company. Water Piping, Building #50. Leased property, from works property to supply Meter Repair Shop and Store Room, Building #50.

	Structural cost.	Present value.
Water Piping 188′ 0″ @ $ .17	$31.96	
Valves 11 @ .315	3.46	
	$35.42	
Depreciation 50%	17.71	
		$17.71

1058 SECTION 71. Inventory pages 168 to 183. Leased Property Piping. Pages 204 to 207. Des Moines Gas Company. Summation of Small Piping in the various yards.

Inventory page.	Lin. ft.	Price per struc. Ft.	Cost.	Present value.
168. Water piping	4647′ 0″	$.338	$1,570.55	
170. Circulation piping	692′ 11″	.572	396.61	
171. Steam piping	3779′ 6″	.479	1,813.43	
174. Exhaust Steam piping	3932′ 1″	.402	1,581.89	
177. Oil piping	2734′ 0″	.568	1,554.03	
179. Gas "	2500′ 2″	.1715	428.69	
180. Tar "	747′ 0″	.323	241.34	
181. Drain piping	1167′ 4″	.237	276.30	
183. Sewer "	17969′ 0″	.606	1,071.59	
Leased property:				
204. Gas (Bldg. #50) piping	912′ 9″	.176	160.81	
205. Steam (in Bldg. #50) piping	1730′ 0″	.196	338.51	
206. Steam (Works property to Bldg. #50) piping	572′ 0″	.308	176.09	
207. Water (Bldg. #50) piping	188′ 0″	.188	35.42	
Total	25,371′ 9″	.38	$9,645.26	
Depreciation 50%			4,822.63	
				$4,822.63

Most of this piping has been put in after the works were in operation: Sufficient allowance for overhead charges is made in the unit prices used for computation. Depreciation by inspection.

E IN CENTER

1059 SECTION 72. Inventory page 184. Des Moines Gas Company. Oil unloading device. For unloading oil from cars to storage tanks. Four in number.

	Structural cost.	Present value.
Contract price	$200.00	
Overhead charges 12½%	25.00	
Structural Cost	$225.00	
Depreciation 25%	56.25	
		$168.75

SECTION 73. Inventory page 185. Des Moines Gas Company. Gas mains in works yards.

Cast iron	8″ —	20′	@ 0.93		$18.60
" "	10″ —	101′	@ 1.25		126.25
" "	14″ —	37′	@ 1.75		64.75
" "	16″ —	1183′	@ 2.10		2,484.30
" "	20″ —	368′	@ 2.90		1,067.20
" "	24″ —	754′	@ 3.60		2,714.40
					$6,475.50

Total straight pipe:

12 drips	24,418 lbs.			
10 reducers	4,449 "			
4 crosses	5,531 "			
31 tees	36,408 "			
23 Bends	15,009 "			
3 Sleeves	977 "			
Plugs, flanges and cap	2,081 "			
Total specials	88,873=44.4 tons	@	$60	$2,664.00

8″ Valves	1	@ $21.00	$21.00	
14″ "	1	@ 74.00	74.00	
16″ "	12	@ 74.00	888.00	
20″ "	4	@ 130.00	520.00	
24″ "	2	@ 150.00	300.00	
				$1,803.00
				$10,942.00

1060 Brought forward $10,942.00

Extra 1,000 ft. ditching and miscellaneous for specials.. 500.00

Structural cost plus..... $11,442.00

COPY BOUND CLOS

SECTION 74. Inventory page 202. Des Moines Gas Company. Pipe Coating Tank #60 (a tar trough). Erected 1900. Wood construction.

	Structural cost.	Present value.
Contract price	$51.53	
Overhead charges 12½%	6.44	
Structural cost new	$57.97	
Depreciation 10 yrs. 45%	26.09	
		$31.88

Appears to have been made of a lot of old pipe and lumber.

SECTION 75. Cost Data from Buffalo and Cleveland Distribution System.

When we come to the distribution system covering street mains and services, but not the attached meters, the system of overhead charges heretofore used at 12½% is changed to an addition of 10% for undistributed expense and 15% for contractor's profit, making a total of 26½% added to the cost of raw material and productive labor.

It is the custom of gas companies to lay their own mains under their own foremen in order to insure tight joints and even grades to drips, by the use of skilled men allowed all the time that is necessary to do a good job.

Another point in which the laying of mains and of services differs essentially from the construction of the manufacturing works appears in the fact that both mains and services are put in on the installment plan as required to reach consumers, and except in the case of a very small proportion laid at the outset, the expense
1061 is larger than would be the case if all the mains were put in continuously until the whole district, present and future, was occupied.

In the case of services to the actual cost of labor and material is added 4¢ per lineal foot nearly doubling the usual net price of 1¼" service pipe.

The writer has prepared tables of the cost of laying gas mains with a great deal of detailed labor and has selected a scale of prices and a graphical representation of all details of street main laying first prepared and used in the City of Buffalo, New York, where he had access to the official records, of the city, giving the cost of laying the slightly heavier water mains in the streets of Buffalo under the conditions of meeting such obstacles in the way of street and steam railways to be crossed, sewer inlets to be replaced and all of the obstructions usually found in the streets of a large city.

In computing the excavation and filling of the ditches, he found the cost to be about 40¢ per cubic yard, and this cost is confirmed in the City of Des Moines by Mr. King, who has laid many of the underground conduits at present in the streets in the City of Des Moines.

The basic prices of cast iron mains taken ranges from $30.80 per

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ton of 2,000 pounds for 3" pipe, to $26.80 for 24" pipe delivered in the city.

Recent quotations in the Iron Age of $30.00 a ton for cast iron pipe confirm these basic prices which were obtained for a period of five years anterior to the year 1907, and give the following prices per foot for pipe laid without pavement.

	3"	cast	iron	pipe	36¢	per	ft.
	4"	"	"	"	49¢	"	"
	6"	"	"	"	69¢	"	"
1062	8"	cast	iron	pipe	93¢	per	ft.
	10"	"	"	"	$1.25	"	"
	12"	"	"	"	1.50	"	"
	14"	"	"	"	1.75	"	"
	16"	"	"	"	2.10	"	"
	20"	"	"	"	2.90	"	"
	24"	"	"	"	3.60	"	"

In Cleveland, Ohio, where the writer made an appraisement of the three artificial gas works there built, the Secretary of the Cleveland Gas Light & Coke Company appeared before the Board of Review for Taxes and presented, in 1903, the following scale of costs required for laying the four or five hundred miles of mains in the streets of Cleveland.

For	3"	cast	iron	pipe	36¢	per	lineal	foot.
"	4"	"	"	"	47¢	"	"	"
"	6"	"	"	"	65¢	"	"	"
"	8"	"	"	"	93¢	"	"	"
"	10"	"	"	"	$1.19	"	"	"
"	12"	"	"	"	1.44	"	"	"
"	16"	"	"	"	2.17	"	"	"
"	20"	"	"	"	2.85	"	"	"
"	24"	"	"	"	3.75	"	"	"

In comparing these scales it is worthy of note that the 4" and 6" sizes used by me at 49¢ and 69¢ are given by the Cleveland Company at 47 and 65 cents per lineal foot, and will produce a lower valuation of a system of mains.

Amongst the exhibits filed in 1894 in the suit of the Capital City Gas Light Company against the City of Des Moines, is the following estimate of a well known gas engineer, Mr. William Henry White, for the Capital City Gas Light Company,

1063	For	3"	cast	iron	mains	laid	35¢	per	lineal	foot.
	"	4"	"	"	"	"	45¢	"	"	"
	"	6"	"	"	"	"	70¢	"	"	"
	"	8"	"	"	"	"	85¢	"	"	"
	"	10"	"	"	"	"	$1.00	"	"	"
	"	12"	"	"	"	"	1.30	"	"	"
	"	14"	"	"	"	"	2.00	"	"	"
	"	16"	"	"	"	"	2.30	"	"	"

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It will be noted in this scale of prices that Mr. White gives for 4" and 6" respectively 45 and 70 cents as against my own 49 and 69 cents per lineal foot. Again showing that the prices giving the cost of laying mains in my subjoined computations are higher than either of these used by the gas companies in Cleveland, Ohio, or in Des Moines, Iowa.

I beg leave to again call attention to the fact that the overhead charges properly chargeable to the building of the manufacturing plant do not exist in the case of a distribution system because the works being in operation the salaries of higher officials are charged to operating cost and enter into the cost of making gas in most cases which have come to my knowledge, and therefore the 26½% added to the cost of raw material and productive labor is a most liberal provision for the lack of economy resulting from interrupted laying of mains and services and the expense of keeping men on for whom there frequently is no work.

It will be noted in the subjoined estimate that, with the exception of the wrought iron 2½" temporary street mains, there has been no depreciation of the street system for physical decay, obsolescence or inadequacy.

SECTION 76. Inventory page 209. Des Moines Gas Company. Structural Cost of Mains Laid Without Pavements. Mains
1064 laid in ditches, lineal feet.

Wrought iron 2½", 33,947 ft., @ 25¢			$8,487.00	
Depreciation 33%			2,829.00	
				$5,658.00
Cast Iron 3"	35,301 ft.	@	36¢	12,708.00
" " 4"	573,724 "	@	49¢	281,125.00
" " 6"	162,004 "	@	69¢	111,783.00
" " 8"	64,934 "	@	93¢	60,389.00
" " 10"	32,008 "	@	$1.25	40,010.00
" " 12"	31,349 "	@	1.50	47,024.00
" " 14"	622 "	@	1.75	1,088.00
" " 16"	27,206 "	@	2.10	57,133.00
" " 20"	6,036 "	@	2.90	17,504.00
" " 24"	1,180 "	@	3.60	4,248.00
	968,311 "	@	0.659	$638,670.00

No depreciation for cast iron piping.
Cast Iron Mains laid in River.

Wrought iron 8"	673 ft.	@	($1.25 & 1.30)	$2.55	$1,716.00
Cast " 16"	1,300 "	@	(2.10 & 3.07)	5.17	6,721.00
" " 24"	639 "	@	(3.60 & 5.54)	9.14	5,840.00
	2,612 "			$5.50	$14,277.00

NOTE.—Cross timber and 16 ft. piling with yoke, estimated at $10.00 per pile.

8″ main 37 piles @ $10.00	$370.00	
Coffer dam and pumping (if any)	500.00	
		$870.00

Averaging $1.30 per ft. pipe.

16″ Main 199 piles at $10.00	$1,990.00	
2 Coffer dams and pumping	2,000.00	
		3,990.00

Averaging $3.07 per ft. pipe.

24″ main 154 piles at $10.00	1,540.00	
Coffer dam and pumping (loose rock)	2,000.00	
		3,540.00

Averaging $5.54 per ft. pipe.

1065 *Recapitulation.*

968,311 ft. street mains in ditches and on bridges	$638,670.00
2,612 " " " " River	14,277.00
970,923 " Total present value of mains	$652,947.00

183,89 miles in length.

The total cost of street mains from the beginning of the first gas company to date appears to be recorded in this company's books as $647,290.35.

SECTION 77. Inventory page 217. Des Moines Gas Company. House Services Only.

Price 1¼″ wrought iron pipe $0.225, Disct. 74.75% Net	$0.057
Carting, fittings and miscellaneous	.04
Labor and ditch 2 x 4 ft.	.10
Total per foot of service	$0.197
Average cost per ft. length new about	$0.20
Cost of one 80 ft. service new	16.00
17,170 services at $16.00 Structural cost	$274,720.00
Depreciation 50% for 7½ years	137,360.00
Present value	$137,360.00

These works appear to have been started in 1876 or about 35 years ago, and presumably its service connections have been steadily added each year.

It is customary to reckon the life of wrought iron services at about 15 years, and 7½ years is probably less than the average age of Des Moines services. No data as to the age of this Company's services is accessible. However, $8.00 per service is larger than the

allowance usually made for old services in closely built eastern cities and appears to me very liberal in this case. No overhead charges are made because in going works these expenses are charges to gas making and appear in operating cost.

1066 The total structural cost of services from the company's books appears to be $257,672.56 from the beginning.

SECTION 78. Inventory page 218. Des Moines Gas Company. Lamp Services and Lamp Posts.

Items.	Structural cost.	Present value.
Services, 1¼" pipe laid in ditch 2 x 4 ft. 18 ft. @ 20¢	$3.60	
Riser ¾" pipe in post, 13 ft. @ 7¢	.84	
C. I. Lamp post 280 lbs. @ 3½¢	9.80	
Labor setting post, hauling, excavation, etc.	3.00	
	$17.24	
Total delivery and erecting price 1,140 lamp posts @ $17.24	$18,653.60	
Depreciation obsolescence 50%	9,326.80	
Present Value		$9,326.80

It is customary to place lamp posts in advance of paved streets in the outskirts of cities.

The growing preference for electric street lighting by means of Tungsten incandescent lights is rapidly driving ordinary forms of gas street lights out of use, therefore 50% depreciation is a rather small allowance.

The total of "Street Lamp extension" recorded in the books of this gas company from the beginning to 1911 is $25,335.43.

SECTION 79. Meters in Use. In the appraisement of the meters in use, subjoined, the first discount is given as 42%, which 42% is the amount claimed by Mr. Daniel Warmington and Mr. Walter K. Slaven, officials of the gas light companies of Cleveland, Ohio.

1067 It is more than probable that if this discount was given to the Cleveland Companies that a larger discount has been given to the United Gas Improvement Company of Philadelphia, although it is quite possible that the usual discount of 33% has been that allowed to the Des Moines Gas Company, and for this reason I have subsequently added 15½% before adding the overhead charges 12½%, and subtracting the depreciation of 33⅓%.

This depreciation of 1/3 corresponds to the basis of depreciation assumed by the United Gas Improvement Company, which gives about 25 years as the life of a meter and a little over 8 years as the age of a Des Moines gas meter.

SECTION 80. Inventory Page 227. Des Moines Gas Company Meters in use.

			Cleveland net price.	Old 42
Ordinary dry meters:				
3	light	915 @ $4.35	$3,980.25	
5	"	7122 @ 5.51	39,242.22	
10	"	1008 @ 6.96	7,015.68	
20	"	106 @ 9.57	1,014.42	
30	"	72 @ 13.05	939.60	
45	"	18 @ 19.14	344.52	
60	"	9 @ 26.10	234.90	
80	"	1 @ 35.96	35.96	
100	"	3 @ 43.50	130.50	
150	"	1 @ 52.20	52.20	
200	"	1 @ 92.80	92.80	
		9256 @ 5.73		$53,083.0
Prepayment meters:		Recent prices 42%.		
5	light	10207 @ $8.50	$86,759.50	
10	"	227 @ 11.00	2,497.00	
		10434 @ 8.55		$89,256.5
1068		Type A meters:	Recent prices 42% Disc	
10	light	46 @ $8.41	$386.86	
30	"	4 @ 19.72	78.88	
60	"	1 @ 46.40	46.40	
		51		$512.1

Cast iron meter:

2000 light 1 @ $1,000, equivalent	$1,000.0
Total 19,742 meters freight etc., @ $1.00	19,742.0
Total delivery and erecting price	$163,594.0
Add 15½% to cover 33% disct. instead of 42%	25,357.0
	$188,951.0
Overhead charges 12½%	23,619.0
Total Structural Cost	$212,570.0
Depreciation average 33 1/3% (2 to 3 yrs. use)	70,857.0
Present value	$141,713.0

The total charge to meters on books of Des Moines Gas Company is $187,755.93 from the beginning.

SECTION 81. Meters in Stock. These meters in stock should properly be included in the working capital of about $68,000.00, allowed for that purpose, but being relatively small have been included in the appraisement in order to favor the Company.

SECTION 82. Inventory Page 228. Des Moines Gas Company. Meters in Stock.

Ordinary dry meters.		Old prices 42% discount.	
3 light	178 @ $4.35	$774.30	
5 "	237 @ 5.51	1,305.87	
10 "	166 @ 6.96	1,155.06	
20 "	14 @ 9.57	133.98	
30 "	4 @ 13.05	52.20	
45 light	8 @ 19.14	153.12	
50 "	3 @ 26.10	78.30	
	610 6.00		$3,652.83
1069	Prepayment meters.	New prices 42%.	
5 light	196 @ $8.50	$1,666.60	
10 "	39 @ 11.00	429.00	
	235		$2,095.60
Type "A" Meters.			
10 light	6 @ $8.41	$50.46	
30 "	2 @ 19.72	39.44	
	8		$89.90
Total 853 in stock @ $1.00.			
Freight, etc.			$853.00
Total delivery price			$6,691.33
Add 15½% to cover difference between 33 and 42%			1,037.00
Structural cost and present value			$7,728.00

SECTION 83. Inventory Exhibit #2, No page Des Moines Gas Company. Works tools.

	Structural cost.	Present value.
Purchase price	$1,189.78	
Overhead charges 12½%	148.72	
Structural value	$1,338.50	
Depreciation 50%	669.25	
		$669.25

Idle Apparatus:

Purchase price	$616.65	
Overhead charges 12½%	77.08	
Structural value	$693.73	
Depreciation 95%	659.04	
		$34.69

1070 Miscellaneous:

Purchase price	$163.06	
Overhead charges 12½%	20.38	
Structural value	$183.44	
Depreciation 75%	137.58	
		$45.86

Summaries:

Works tools	$1,338.50	$669.25
Idle apparatus	693.73	34.69
Miscellaneous	183.44	45.86
	$2,215.67	$749.80

I consider these figures to be reasonable values of the tools, based on the description given in the company's inventory and a casual inspection of the several tools on the company's premises. The prices of the several items are derived chiefly from catalogues.

Under the heading of "Miscellaneous Tools" appear several office furniture items, which occur again under another portion of the inventory, i. e. "Works Office Furniture," and have consequently been omitted under the former heading.

SECTION 84. Inventory Exhibit #3 No. Page Des Moines Gas Company. Distribution Tools.

Rolling stock tools.	Structural cost.	Present value.
Purchase price	$691.10	
Overhead charges 12½%	86.39	
Structural value	$777.49	
Depreciation 50%	388.75	
		$388.74

1071

Main and service tools.	Structural cost.	Present value.
Purchase price	$1,184.05	
Overhead charges 12½%	148.01	
Structural value	$1,332.06	
Depreciation 50%	666.03	
		$666.03

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Fitting and Meter Repairs:		
Purchase price	$771.65	
Overhead charges 12½%	96.43	
Structural value	$868.08	
Depreciation 50%	434.04	
		$434.04
Summaries:		
Rolling stock tools	$777.49	$388.74
Main and service tools	1,332.06	666.03
Fitting and meter repairs	868.08	434.04
	$2,977.63	$1,488.81

The above figures represent a fair valuation of the distribution tools, based on descriptions given in company's inventory and data obtained by inspection on several occasions of certain of the apparatus at the company's yards.

SECTION 85. Cost Data From Des Moines City Rejected Items. The pavements claimed as the property of the Des Moines Gas Company because after the mains have been laid the city has, at its own expense, placed costly pavements over them appears to be an unwarranted appropriation of other people's property, the pavements costing $204,994.00.

Cast iron mains under these pavements are practically indestructible and, I am told that many successive pavements have been worn out and replaced over certain portions of the street main system of Des Moines, therefore it is quite possible, with good
1072 management, that the company should avail itself of the time of repaving by the city for the purpose of enlarging its mains or adding to them if such enlargement is found to be necessary.

It is true that a costly pavement over a street main adds to the cost of emergency repairs if they are at any time required, but this cost goes into the operating expenses of the Gas Company, and is charged into the cost of gas.

Whenever a city puts down costly pavements over an existing system of mains it creates a barrier against possible competition by another company by increasing the cost of reduplication of mains in the streets by the new company.

In the case of the sale of a gas company to another public service corporation it appears to me quite probable that the cost of pavements should be taken into consideration but in a rate case or in the case of the purchase of the gas works by the municipality I cannot conceive of any reason in justice, or arising from good fortune which should permit the claiming of pavements over a street gas mains unless actually put down by the company.

The cost of lifting pavements on street gas mains should also be eliminated for the same reason.

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Included in the price per lineal foot of the various sizes of gas mains are such items as line pot drips, valves and steam and street railway crossings, and therefore these items as follows:

Lifting pavement	$28,242.00
Line pot drips	3,000.00
Valves	2,744.00
Steam and street railway crossings	636.00

1073 have been omitted from the appraisement.

In the item of services on the average of structural cost is intended to be covered the pavements claimed by the gas company, $35,441.45, and taking up pavement, $50,238.88. It is probable that in the majority of cases of renewals of old services that these expenses have been charged into repairs and gone into operating expenses in making gas. It is worthy of note also that all of these expenses have no overhead charges above raw material and productive labor, since such expenses have been incurred during the month of the gas works. The salaries and other expenses of the management do not answer as overhead charges but as charges against the operating expense of making gas.

SECTION 86. Inventory Page 210. Des Moines Gas Company. Pavements Claimed by Gas Company.

Asphalt on Concrete	31,378.8	sq. yds.	@	$1.85	(1911D)	$58,051
Wood Block on "	3,937.3	" "	@	3.00	"	11,812
Brick on "	40,608.	" "	@	2.00	"	81,216
Brick on Sand	35,050.9	" "	@	1.50	"	52,576
Macadam	530.	" "	@	1.10	(1907)	583
Cement Concrete	540.	" "	@	1.40	(1911D)	756
	112,045	" "	@	1.83	average	$204,994

or about 31.4% of $652,947, the correct valuation. The Gas Company seeks to add $204,994 to the value of its street mains for pavements laid by this city at its own expense. It is customary and proper to add to the cost of the bare gas mains, the cost of ditching and laying borne by any Gas Company, but it appears as if practically all of this company's mains had been laid without lifting pavements of our present costly character, and in the majority of cases before our pavements were laid at all; so that $652,947

1074 will probably be a fair present value of the street gas mains as the prices per foot cover all special castings, valves, hauling, lead cement and tools, besides an allowance of 10% undistributed expense and 15% contractor's profit. In addition to these items, the quotations for cast iron piping in the Iron Age in 1910 *is* the basis of the above given costs per lineal foot modified for each size as given in the diagram. Obviously the Des Moines Gas Company does not own its ditch in the streets; this ditch is merely an easement where locality is changeable at the will of the City, or of

the Gas Company. Nor can it claim to own the pavements above its easement, for unless its mains are laid after the pavement is down, it has been at no expense for pavements; and in case the Gas Company does lift and replace a pavement for construction, it can only justly add the actual cost of so doing to its investment in its street mains.

Gas distribution, by reason of the inconvenience arising from obstructing the streets unnecessarily, is a natural monopoly. When, as is today the case, a city lays costly pavements over gas mains already down, it places a barrier in the way of competition, since the cost of lifting and repairing the pavement would be added to any competing system.

In the negotiations attendant upon a sale of the gas works, this extra cost might be recognized as an element of its selling value, but should not be used to tax citizens already taxed for the pavements. If at any time, for the purpose of repairs to street mains or services, it is necessary to lift costly pavements, this cost goes into operating expense under the head of repairs, and may slightly increase the cost of supplying gas, but does not add anything to the value of this company's fixed investment.

1075 SECTION 87. Inventory page 214. Des Moines Gas Company. Cost of Lifting Pavements on Street Gas Mains.

Asphalt on Concrete	8¢	per	lineal	ft.	of	ditch.
Wood Block on Concrete	7¢	"	"	"	"	"
Brick on Concrete (Tar)	7¢	"	"	"	"	"
Brick on Sand (2 course)	3¢	"	"	"	"	"
" " " (2 course)	5¢	"	"	"	"	"
Macadam	2¢	"	"	"	"	"
Concrete	3¢	"	"	"	"	"

Asphalt on Concrete	138,580 ft.	@ 8¢	.....	$11,086
Wood Block on "	14,655 "	@ 7¢	.....	1,026
Brick " "	153,257 "	@ 7¢	.....	10,728
Brick on Sand	132,015 "	@ 4¢	.....	5,281
Macadam	3,180 "	@ 2¢	.....	64
Concrete	1,890 "	@ 3¢	.....	57
	443,577 "	@ 6.4¢	.....	$28,242

When the taking up of the street paving over gas mains has occurred, an average of 6.4 cents per lineal foot of ditch appears to be correct.

As the total cost $28,242 of lifting paving over all mains is less than ½ of one per cent of $652,947, and is included in that sum to the extent to which it has occurred in the streets of Buffalo and Cleveland, it should not be added even if proof could be given that every foot of 443,557 feet had been lifted.

SECTION 88. Inventory page 215. Des Moines Gas Company. Line Pot Drips.

1076

400 Each	17—3″ drips	6,800 lbs.	
	107—4″ "	42,800 "	
800 Each	30—6″ "	24,000 "	
	7—8″ "	5,600 "	
1,200 Each	5—10″ "	6,000 "	
	9—12″ "	10,800 "	
2,000 Each	11—16″ "	22,000 "	
	1—20″ "	2,000 "	
	187	120,000 "	

60 Tons (2,000) lbs. @ $50.00 ..... $3,000.00

As no drawings have been furnished of the various sizes of line drips, the total weight of 187 drips had been estimated as shown above at 60 Tons, which will be found to be liberal. The cost of special castings is included in the estimate given for street mains, $652,947.00.

The above estimate of $3,000.00 is less than ½ of 1%, and should not be added to it. This amount claimed has been checked merely to show its unimportance.

SECTION 89. Inventory page 215. Des Moines Gas Company. Valves claimed by Gas Company. Double Gate. Hub End.

5— 3″	Valves	@	$6.00	$30.00
63— 4″	"	@	9.00	567.00
30— 6″	"	@	14.50	435.00
8— 8″	"	@	21.00	168.00
8—10″	"	@	30.00	240.00
3—12″	"	@	38.00	114.00
10—16″	"	@	74.00	740.00
3—24″	"	@	150.00	450.00
130			21.11	$2,744.00

1077 The above $2,744.00, value of 130 valves claimed, has been computed to show its unimportance. It is less than ½ of 1% of the total value of the Street mains, 652,947 and is included in it.

SECTION 90. Inventory page 216. Des Moines Gas Company. Amounts claimed by Gas Company for Steam and Street Railway Crossings.

In case of railway crossings by gas mains, the important question is which located first, and this point is not stated by the Gas Company.

It would appear to me to add to the cost of ditching, about $1.00 per crossing to support the track by means of a couple of ties or beams placed parallel to the rails if the track is already there. Under the doubtful assumption that the gas mains were all laid after the tracks, the following extra cost might be required:

Steam Railway crossings,	191	@	$1.00	$191.00
Street " "	227	@	1.00	227.00
" " "	109	@	2.00	218.00
				$636.00

As figures given for laying mains in Buffalo and Cleveland necessarily included crossing Steam and Street Railways, the above amount of $636.00 is included in the total of $652,947, estimated value of street gas mains, and should not be added to it. The very large amounts claimed by the Gas Company for railway crossings appear to be impossible from any practical point of view.

SECTION 91. Inventory page 219. Des Moines Gas Company. Services Laid Under Street Paving.

1078 Pavements claimed by Gas Company:

Asphalt on Concrete	5,507	sq. yds.	@ $1.85...	$10,187.95
Wood Block on Concrete	601	" "	@ 3.00...	1,803.00
Macadam	103	" "	@ 1.10...	113.30
Cement Concrete	13	" "	@ 1.40...	18.20
Brick on Sand	5,806	" "	@ 1.50...	8,709.00
Brick on Concrete	7,305	" "	@ 2.00...	14,610.00
	19,335	" "	@ 1.83...	$35,441.45

In past years it has frequently happened that gas lamp posts were ordered placed where pavements have to be lifted and repaired in order to erect them, but in the last decade electricity as a street light has driven street gas lamps into the suburbs where expensive pavements are not found, and it is also probable that the gas posts still remaining in our streets were all erected before our present costly forms of street pavements were put down. The placing of a pavement over a service may increase the cost of repairs which account entering operating expense may increase the cost of supplying gas to street lights.

The above $35,441.45 should not be added to the value of services. Presumably all pavements lifted to repair services has been charged to operating expense.

SECTION 92. Inventory page 226. Des Moines Gas Company. Taking up Paving over Services.

Asphalt on Concrete	24,780 ft.	@	8¢.....	$1,982.40
Wood Block on Concrete	2,317 "	@	7¢.....	162.19
Brick on Concrete	28,177 "	@	7¢.....	1,972.39
Brick on Sand	22,395 "	@	4¢.....	895.80
Macadam	465 "	@	2¢.....	9.30
Concrete	60 "	@	3¢.....	1.80
	78,194 "	@	6.4¢.....	$5,023.88

It appears as if the principal cause of lifting pavements over services must be repairs which enters into operating expense.
1079 The sum of $5,023.88 is not properly chargeable to capital expenditure.

SECTION 93.

Summary of the Tangible Property of the Des Moines Gas Company, November 1st, 1910.

Estimated of 3,000,000 cubic feet safe daily capacity.

Inventory page.	Items.	Structural cost.	Present value.
15.	Land used (See Real Estate)		
16.	Purifying House #1 A & B...	$7,768.00	$5,826.00
25.	Contents Purifying House.....	21,130.00	13,819.00
26.	Fire Brick Shed #1 C.....	84.00	82.00
28.	Meter Governor, Exhauster and wash room Bldg. #3.....	5,771.00	2,135.00
41.	Contents of above building.....	23,466.00	17,600.00
43.	Retort, Engine, Generator and Blower House #4.....	3,663.00	1,209.00
52.	Contents of above building #4.	28,280.00	8,678.00
53.	Coal Shed, Scrubber and Condenser Room #5.....	1,626.00	1,008.00
58.	Contents Room #5.....	690.00	345.00
59.	Boiler and Engine Rooms #6 A & B.....	5,543.00	4,601.00
68.	Boiler House Extension #6 C..	1,005.00	974.00
74.	Generator House #7	7,573.00	6,967.00
83.	Contents Houses 6 A-B & C and #7 (Water Gas Manufacturing)	62,311.00	62,311.00
84.	Coal or Coke Shed #8 A.....	4,751.00	3,278.00
88.	Coal or Coke Runway #8 B...	358.00	276.00
87.	Contents Building #8 A.....	338.00	169.00
91.	Contents Building #8 B.....	1,697.00	566.00
92.	Smith, Carpenter Shop and Store Room, #10.....	6,582.00	4,081.00
	Carried Forward.....	$182,636.00	$133,925.00

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	Brought Forward.....	$182,636.00	$133,925.00
103.	Contents Bldg. #10.....	1,055.00	528.00
104.	Barrel Oil Store House #11...	206.00	202.00
107.	Pump House #12.....	672.00	672.00
111.	Contents Bldg. #12.....	1,800.00	1,350.00
112.	Oil Pump House Bldg. #13...	145.00	140.00
115.	Contents Bldg. #13.....	571.00	457.00
116.	Meter House #14.....	1,242.00	1,218.00
120.	Contents House #14.....	10,662.00	10,662.00
121.	Stable #15.....	1,493.00	916.00
126.	Boiler House #16.....	629.00	566.00
129.	Contents Bldg. #16.....	1,501.00	1,181.00
130.	Fire Brick Storage #17.....	111.00	50.00
132.	Fire Hose House #35.....	27.00	23.00
134.	Coke Shed Bldg. #53.....	523.00	52.00
154.	Coke Rack #54.....	66.00	56.00
195.	Oil Barrel Store House #55...	53.00	27.00
200.	Rubbish Kiln.....	23.00	12.00
164.	Works Paving.....	1,454.00	872.00
166.	Works Fencing.....	1,339.00	1,138.00
203.	Fencing, Leased Property.....	377.00	321.00
156.	Lumber in yard, $69.20 omitted as operating stock		
	Exhibit 1—Main Office furniture and fittings.....	9,365.00	8,427.00
	Works Office—Meter Room Furniture	172.00	86.00
	" " 3rd & Vine "	417.00	209.00
188.	Electric Wiring.....	187.00	140.00
	Carried Forward.....	$216,726.00	$163,230.00

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	Brought Forward.....	$216,726.00	$163,230.00
190.	Fire Protection Apparatus.....	282.00	188.00
194.	Fixtures in Meter and Fitting Shop #50.....	772.00	514.00
	Total Buildings and Contents, Fencing and Paving.....	$217,780.00	$163,932.00

Yard Structures and Fixtures.

137.	Relief Holder #18.....	34,453.00	10,336.00
140.	Storage Holder #19.....	50,625.00	27,178.00
142.	" " #20.....	127,350.00	101,880.00
143.	Oil Tank #21.....	4,703.00	3,763.00
145.	Oil Tank #22.....	2,785.00	1,880.00
147.	Tar Tank & Evaporator #23 Tank	1,034.00	543.00
	Separator	57.00	54.00
150.	Oil Tanks #24 and #25.....	16,484.00	15,865.00

LOSE IN CENTER

152.	Old Holder Oil Tank #36.....	105.00	61.00
197.	Holder Oil Tank #58.....	456.00	387.00
158.	Wells, Valve Boxes, Tar Separators, etc., North Yard.....	2,270.00	1,135.00
	Wells, Valve Boxes, Tar Separators, etc., South Yard.....	636.00	477.00
163.	Outside Apparatus.....	2,531.00	816.00
168.	Small Piping in the Various Yards	9,645.00	4,823.00
184.	Oil Unloading device 4 Stations.	225.00	169.00
185.	Gas Mains in Works Yard.....	11,442.00	11,442.00
202.	Pipe Coating Tank.....	58.00	32.00
	Totals of Yard Structures and Fixtures	$264,859.00	$180,841.00

1082 *Summary of the Tangible Property.*

Distribution System.

Inventory page.	Items.	Structural cost.	Present. value.
209.	Street Mains—No Pavements.	$652,947.00	$652,947.00
217.	House Services Only.....	274,720.00	137,360.00
218.	Lamp Services and Lamp Posts	18,654.00	9,327.00
227.	Meters in Use	212,570.00	141,713.00
228.	Meters in Stock (Should be included in Working Capital)	7,728.00	7,728.00
	Total Distribution System...	$1,166,619.00	$949,075.00
	Works Tools:		
	Exhibit #2 Works Tools.....	$1,338.00	$669.00
	Idle Apparatus and Scrap.....	694.00	35.00
	Miscellaneous Tools	183.00	46.00
	Exhibit #3 Rolling Stock Tools...	777.00	389.00
	Main and Service Tools.....	1,332.00	666.00
	Filling & Meter Repairs Apparatus	868.00	434.00
	Exhibit #4 Stable Equipment #15	10,000.00	5,000.00
	Totals for Tools & Stable Equipm't	$15,192.00	$7,239.00

Recapitulation of Appraisement November 1, 1910.

Items.	Structural cost.	Present. value.
Total Bldgs. & Contents, Fencing and Paving	$217,780.00	$163,932.00
Total Yard Structures and Fixtures.	264,859.00	180,841.00
" Distribution System	1,166,619.00	946,075.00
" Tools and Stable Equipment.	15,192.00	7,239.00
" Land Owned	35,765.00	100,000.00
" **All Fixed Investment.....**	**$1,700,215.00**	**$1,401,087.00**

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1083 Total amount Company's investment December 31, 1910, found by City accountants $1,592,563.00.
Total gas sales for year 1910, 528,375,454 cubic feet.

Structural Cost of whole investment per 1000 cubic feet sold.. $3.22
Present Value " " " " " " " " .. $2.65

Des Moines Gas Company.

Summary of Rejected Tangible Property Claimed by Des Moines Gas Company and not Allowed by Appraiser in Rate Cases.

Inventory page.	Items.	Structural cost.	Present. value.
210.	Payments Claimed by Company	$204,994.00	$204,994.00
214.	Cost of Lifting Pavements on mains	28,242.00	28,242.00
215.	Line Pot Drips	3,000.00	3,000.00
215.	Valves in Streets	2,744.00	2,744.00
216.	Steam and Street Railway Crossings	636.00	636.00
219.	Pavement for services laid under Street Paving.....	35,441.00	35,441.00
226.	Pavement for services taking up same	5,024.00	5,024.00
	Totals rejected claims for rate appraisements and of duplications in value of apparatus	$280,081.00	$280,081.00

1084 SECTION 94. Residual Depreciation: The term "depreciation" appears to be rather vague in its meaning, and for the sake of a clear understanding I shall use it as meaning the residue of physical decay, obsolescence or inadequacy which cannot be cured by complete and careful repairs, even if these repairs be made as complete and thorough as it is possible for the art of man to make them. Thus a gas works may always be well cared for and in good condition, and yet at the end of a term of years become worthless, although this final collapse fortunately does not occur at the same time for all parts of the works.

In the case of the Des Moines Gas Company I have given you its structural cost, meaning by that the actual money spent by the company and invested in fixed plant as near as I could estimate it at $1,700,215.00.

I have also given you its present value for the purpose for which it is operated, i. e., making gas, as $1,401,087.00.

This present value merely means the amount which a fair-minded purchaser should pay for the works in their present condition, if he was purchasing them for the purpose of making and supplying gas.

You will note that the structural cost of the land is taken by me from the records found, at $35,765.00, and the present value of the land approximated at $100,000.00, showing an appreciation in value, due to the growth of the City of Des Moines.

Putting this in another way, the structure- of this gas plant purchased for the purpose of supplying gas have depreciated $363,363.00. And the land purchased for the purpose of supplying gas has increased in value $64,235.00, leaving as the residual depreciation of this investment, $299,128.00.

1085 From one of the Exhibits of the Des Moines Gas Company the total amount of gas sold since June 30, 1888, is given as 4,447,494,868 cubic feet, to January 1, 1911. Before 1888 it is necessary to estimate as I have no records accessible. I have, therefore, taken the total amount of gas sold at about 5,000,000,000 cubic feet.

Dividing the residual depreciation $299,128.00 by 5,000,000,000, I find the residual depreciation to be 5.98¢ per M cubic feet of gas sold.

In round figures, since it is but an estimate, we can take this at 6¢ per M cubic feet to be added to the cost of gas—assuming that the depreciation per M cubic feet of gas has been the same since the beginning of the works up to January 1, 1911. As a matter of fact, as the volume of gas sold increases the depreciation per M cubic feet decreases, and therefore the depreciation per M cubic feet in 1910 is very much less than it could have been in 1888.

This physical fact puts us on the safe side in estimating our residual depreciation at 6¢ per M.

Another manner of computing residual depreciation for one year, as subjoined, involves too many assumptions to be safely used, save as a check upon the depreciation derived from long periods of operation of gas works. These assumptions are—depreciation of manufacturing plant and yard structures, 2¼%—which may be less or more, according as the life of the works exceeds or falls below forty years.

1086 In the matter of house services, the life of a service is taken as fifteen years, and 7% as its rate of depreciation. If, owing to improved methods of protective services its life has become twenty-five years, the rate of depreciation is 4%.

In the matter of meters, a meter's life is assumed to be seven years, and the depreciation about 15%.

The appreciation of land per M cubic feet of sales is taken in this instance as 1.29 of a cent.

The Des Moines Gas Company presents the following record of repairs, covering a period of four years, and giving yearly averages, which probably are not as great as might be derived at a longer period:

DES MOINES GAS COMPANY EXHIBIT 24.

	Repairs works.	Repairs mains.	Repairs services.	Repairs meters.
1907	$9,699.99	$2,838.28	$469.22	$2,292.77
1908	6,835.23	4,420.78	504.92	3,443.85
1909	5,996.71	3,166.73	910.41	4,772.99
1910	14,193.78	9,347.30	5,224.76	5,211.63
Total	$36,725.71	$19,773.09	$7,109.31	$15,721.24
Yearly Average	$9,181.43	$4,943.27	$1,777.33	$3,930.31

If now we subtract the yearly average or repairs in each case from the straight depreciation, which would have occurred had no repairs been made, as subjoined, we obtain about 8¢ residual depreciation per M cubic feet of gas, which serves only as a rough check upon the more correct 6¢ per M already deduced from larger quantities and a longer period:—

1087 *Residual Depreciation for One Year. Computed for One Year. Life Works* 40 *Years.*

Buildings, etc., Structural Cost	$217,780		
Yard structures, etc. " "	264,859		
Tools & stables equipment	15,192		
	$497,831	@ 2½%	$12,445.77
Less average annual repairs on basis 5 years			9,181.43
Residual Depreciation			$3,264.34
House services, structural cost	$274,720		
Lamp posts and services	18,654		
	$293,374	@ 7%	$20,536.18
Less average annual repairs			1,777.33
Residual Depreciation			$18,758.85
Meters, structural cost	$212,570	@ 15%	$31,885.50
Less annual repairs			3,930.31
Residual Depreciation			$27,955.19
Appreciation of land per M sales	1.29¢		
528,375 M at 1.29¢			$6,816.04

Recapitulation.

Buildings, etc., Residual Depreciation	$3,264.34
Services, " "	18,758.85
Meters, " "	27,955.19
Total above " "	$49,978.38
Land appreciation subtracted	6,816.04
Resultant residual depreciation one year	$43,162.34

Dividing by 528,375 M—

Apparent residual depreciation per M ..... 8.17¢

The 6 cents per M residual depreciation derived from larger quantities and longer period is the more correct approximation.

1088 SECTION 95. Working Capital for Construction and Operation of Gas Works: Obviously the whole investment in works before they are started must be regarded as working capital upon which a proper rate of interest is allowed to be added to the structural cost at the time of the works' completion and capitalization.

In Section 5, "Over-head Charges," Page 7, I have made an allowance of 12½% on all contracts in and about the works, of which 4½% is, as I regard it, a very large allowance for interest.

In the case of the distribution system of mains I have made an allowance of 10% undistributed charges, and 15% contractor's profit, making a total of 26½% on the cost of productive labor and raw material.

In the matter of land, I have not been able—not being an expert in real estate—to do more than accept the statement of gentlemen in whose judgment I had confidence, and to increase the value of land from about $36,000 to about $100,000, in attempting to compute any overhead charges upon an item so vague and so dependent upon the growth of the city and the neighborhood.

Referring now to the working capital required for the operation of the works after they are finished, I would say that it is a matter in which the opinion of practical operators of works differ widely. I have heard it stated with the utmost confidence by men practically engaged in the operation of gas works, that 30¢ per M cubic feet of sales is what is conveniently required to cover the necessary reserve stocks of coke, of coal, gas oil, purifying material, of service pipe, of street mains and special fittings and castings, of meters and all general stores. But I found that this opinion was only a general one, not based on careful investigation, and intended to give to the Gas Company the widest margin in preparing for any famine of material that might arise, as well as covering the minor expenses of plants.

1089 From my own investigations of the working capital of the Massachusetts Gas Companies which I deem to be well man-

aged, I am led to believe that 13¢ per M cubic feet is all that is practically needed; and although Judge Hough of the United States Circuit Court made to the Consolidated Gas Company an allowance of $1,000,000 which is a less sum per M cubic feet of gas sold by that company, I prefer to adhere to 13¢ per M cubic feet.

Coming directly to figures, I find the necessary working capital for the operation of the Des Moines Gas Company to be $68,689.00, which results from the multiplication of 528,375 M by 13¢. From this should be subtracted the consumers' deposits of 1910, amounting to $897.46, and the meters in stock, amounting to $7,728.00—leaving $60,064 as a balance required to be raised by the stockholders.

However, since this is rather an indeterminate quantity, it will be just as well to retain 13¢ per M as the estimate for required working capital.

SECTION 96. The Cost of Supplying Gas: All of the gas supplied to the City of Des Moines and to its suburb, Valley Junction, is reported to be of 24 candle power average and something over 600 British Thermal Unit heat capacity per cubic foot.

This gas is manufactured by the Lowe Carburetted Water Gas process, from coke and mineral oil. It might — possible to produce equally as useful a gas, but not of as high candle power, by the direct process of distillation of gas coal in retorts after the older method usually practiced in large cities. Under the present conditions this subject is not open to discussion, as there are no coal gas retorts in the works ready for use.

From data derived from the Des Moines Gas Company's books by the city accountants, the following average tabulated cost of 24 candle power gas, at the consumer's meter, is derived:

Cost per M Cubic Feet of Manufacturing and Distributing Gas, January 1, 1906, *to December* 31, 1910.

	In holder mfg. Cents.	Dist.	Commercial exp.	New business.	General exp.	Taxes.	Leakage.	Total. Cents.
2 mos. to Feb. 28, 1906	36.82	5.82	7.92	4.38	1.36	6.14	4.70	67.14
Yr. ended Feb. 28, 1907	36.89	4.67	7.56	4.76	2.68	5.56	2.78	64.90
Feb. 29, 1908	35.13	5.44	7.31	4.36	2.19	6.87	2.20	63.50
Feb. 28, 1909	32.98	5.32	7.57	2.96	2.49	4.47	1.93	59.72
Ten mos. to Dec. 31, 1909	30.75	6.60	8.24	3.93	3.78	7.37	1.99	62.66
Yr. ended Dec. 31, 1910	29.75	8.49	9.01	4.54	4.90	7.25	1.36	65.30
Av. 5 yrs. Dec. 31, 1909	34.02	5.52	7.67	3.98	2.72	6.56	2.27	62.74
Av. 5 yrs. Dec. 31, 1910	33.04	6.21	7.98	4.11	3.22	6.73	2.04	63.33

1091 It will be observed that the average of four years ending December 31, 1909 for the cash operating expenses is 62.74¢ per M cubic feet; and that the average for five years, ending December 31, 1910, is 63.33¢ per cubic feet—showing a sudden increase in the cost of making gas in the year 1910.

In neither of these costs is included the residual depreciation of the gas works.

Perhaps it will be better to obtain a fair average to cover the whole period of five years back of the year 1910, December 31. The subjoined computation shows rejections of items amounting to $16,746.88, and the addition of an item of $1,508.54 previously deducted by the company. By this method the cost, inclusive of cash operating expenses and residual depreciation, appears to be 69.33¢ per M.

Cost of Gas—Des Moines Gas Company Deduced from 5 Years Operations Ending Dec. 31, 1910.

Total operating expenses for 5 yrs. as per Company's books		$1,466,821.22
Deduct the following items:		
Accidents & damages (1893)	$3,685.17	
Replacement values, salary, time and expenses of engineers, draftsmen and others, inventory	5,935.18	
Interest on floating debt	7,126.53	16,746.88
		$1,450,074.34
Add the items previously deducted by Company:		
Interest received on bank balance		1,508.54
Operating expenses for 5 yrs		$1,451,582.88
Residual Depreciation 5 yrs. 6¢ per M		137,522.05
		$1,589,104.93
Total gas sold in 5 yrs. from Dec. 31, 1905 to Dec. 31, 1910		2,292,034,290 cu. ft.
Giving as the average cost of making, distributing and measuring gas, collecting bills, making repairs, allowing for residual depreciation, taxes, legitimate accidents, donations, insurance, bad debts and sundry small expenses		69.33¢ per M.

1092 SECTION 97. Price of Gas: For the five years ending December 31, 1910, the city's accountants have found the total sales of gas to be 2,292,034,290 cubic feet, and the collections to be $2,316,369.08—giving as the average price per M. collected by this Company for its gas for all purposes, $1.0106.

Des Moines Gas Company.

December 31, 1905 *to December* 31, 1910.

	Sales cu. ft.	Collections.
2 mos. 2/28/06	59,059,182	$59,158.83
2/28/07	388,892,406	390,832.88
2/29/08	441,877,493	446,509.75
2/28/29	465,970,133	471,734.22
10 mos. 12/31/09	404,244,022	409,240.40
12/31/10	531,991,054	538,893.00
Total	2,292,034,290	$2,316,369.08

Average per M ..... $1.0106.

The fair and reasonable price, yielding a profit on the fixed investment and working capital required during this period appears to me to be as follows:—

Referring to Section 93: The present value of whole fixed investment for 1000 cubic feet of gas sold, is $2.65,

Referring to Working Capital, Section 95: Working Capital per M cubic feet, 13¢.

Total investment, $2.78.

1093 The question of the rate of profit allowable as a fair and reasonable return upon investment in gas works has been debated in the courts, and in each locality depends upon the value of money for loans without unusual risk.

It is an aphorism of business men familiar with finance that all interest or profit above 6% is proportional to the unusual risk taken; and below 6% all interest less than 6% is given on security having little or no risk at all.

I am content myself with the 6% fixed as the reasonable rate of profit allowed to the Consolidated Gas Company of New York by the Supreme Court of the United States.

6% of $2.78 gives 16.68¢ as the fair profit allowable on each 1000 cubic feet of gas sold by the Des Moines Gas Company.

Recapitulating, we have for the price of 1000 feet of gas, the following items:—

Cash Operating Expenses	63.33¢
Residual Depreciation	6.00¢
Profit, $2.78 @ 6%	16.68¢
Total	86.01¢

It is worthy of note that this 86¢ includes most liberal allowances for advertising, experimenting, seeking new business, making donations, extravagantly furnished offices, and even a special salary charge for salaries paid to non-resident officials, of $10,000 in the

year 1910. Besides all and every legitimate expense for coal, coke, gas oil, labor and repairs which have occurred.

SECTION 98. Increase of Gas Sales with Lowered Prices:

There is a very definite law of a practical or empirical nature, which connects the price of gas with the sales per capita of the community served. But in the present special instance this law will not be used save in so far as it bears upon the case of
1094 the City of Des Moines.

The annual sales per capita is a gauge of the natural law of supply and demand.

It is necessary to adjust comparison of the gas managers' ability in different cities and towns. It is necessary to a conservative consideration of expansion of the existing gas works. It is necessary to fix the capacity of new gas works in advance of their construction.

No variations in the price of gas can be wisely and safely made without using the sales per capita for the basis of computation.

Fixing exact future prices is a common error of inexpert legislators, since the prices of raw materials and productive labor cannot be fixed.

For this reason it is unwise to unalterably fix the price of gas in the future, at least for any considerable period of time, for a change of price in raw material or productive labor may result in injustice either to the company supplying gas or to its customers consuming gas.

In England for many years, and in the case of about two-thirds of the gas companies, and recently in Boston, Massachusetts, a just method of fixing the relative price of gas and the percent of dividends has been reached by the use of the London sliding scale.

This scale's fairness to both producer and consumers of gas should recommend its use in the cases of legislative enactments fixing the price of gas and tending to relieve the unreasoning antagonism often developed between the municipality and a public utility corporation.

But no suggestion of a sliding scale has been made in the ordinance of the Des Moines City Council, passed Dec. 27, 1910. And we must endeavor to find a fixed price for gas for the present time, allowing a margin in favor of the company.

1095 The subjoined statement of the sales of gas for the past twenty-two years will indicate the manner of the growth of the sales of gas in Des Moines:

Des Moines Gas Company.

Statement Gas Sold.

June 30, 1888—Price per M.....	43,646,474	....
June 30, 1889—As below to.....	43,660,021	2.3
Dec. 31, 1890	51,990,789	....
Dec. 31, 1891	52,508,537	1.0
Dec. 31, 1892	50,974,020	*2.9
Dec. 31, 1893	51,354,777	0.7
Dec. 31, 1894	56,662,290	10.3

Dec. 31, 1895—$1.70 and $1.50.....	61,099,842	7.8
Dec. 31, 1896—$1.30	76,436,500	25.1
Dec. 31, 1897—$1.30	83,951,343	9.8
Dec. 31, 1898—$1.25	93,616,429	11.5
Dec. 31, 1899—$1.25	109,820,600	17.3
Dec. 31, 1900—$1.20	141,928,750	9.2
Dec. 31, 1901—$1.20	160,990,352	13.4
Dec. 31, 1902—$1.15	206,763,656	28.4
Dec. 31, 1903—$1.15	244,245,516	18.2
Dec. 31, 1904—$1.15	292,407,382	19.7
Dec. 31, 1905—$1.10	334,404,640	14.4
Dec. 31, 1906—$1.00	372,101,839	11.3
Dec. 31, 1907—$1.00	429,519,162	15.4
Dec. 31, 1908—$1.00	461,177,956	7.3
Dec. 31, 1909—$1.00	497,244,529	7.8
Dec. 31, 1910—$1.00	531,991,054	7.0
Total	4,447,494,868 cu. ft.	

* No record reported before 1888.

In the per cent column at the right hand side great irregularities will be observed in the percentage of gain, until the price of $1.15 in 1902 is reached.

It would appear as if at this price gas was no longer a luxury but had become a commodity generally used for useful purposes.

When, on Jan. 1, 1906, the price of gas finally reached $1.00 the response of the community was a liberal increase in the per cent of use. But as this price continued along down to January 1, 1911, the percentages of increase in the use of gas became less, showing that the community which, in the period of 1890 to 1900 had increased 2.4% annually, and in the period 1900 to 1910 had increased 3.9% annually, were approaching satisfaction.

1096

In connection with this matter of satisfaction, it is necessary to call attention to a mixed metaphor frequently used when gas engineers speak of the point of satisfaction for a community. The originator of this phrase, Dr. Alexander Humphreys, explained that he meant by the "point of satisfaction" to compare a gas company which could no longer increase its sales per capita to a body of saturated steam, which could no longer absorb any more water. It will be understood when I use the phrase "point of satiation" that it has the same meaning as "point of saturation" was intended to give.

In the year 1890 the population of Des Moines was 50,063 and the sales of gas 51,990,789 cubic feet, resulting in a sales per capita of 1,038 cubic feet, with the net price of gas for illuminating purposes at $1.70, and for fuel purposes at $1.50, unless over 10,000 cubic feet were used by a consumer, in which case it was put at $1.25.

In the year 1900 the population of Des Moines was 62,139, and

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the sales of gas 141,928,750 cubic feet, giving a sales per capita of 2,445 cubic feet, with a price of $1.20 for all purposes.

In the year 1910 the population of Des Moines and Valley Junction was 88,954, and the sales of gas to both places 531,991,054 cubic feet, giving a sales per capita of 5,980 cubic feet, with the nominal price of gas at $1.00 and the actual average price of gas $1.01.

We observe in the ten years between 1900 and 1910 the sales of gas per capita have increased nearly 150%, while the population has increased 39%.

The method of reduction of the price of gas is shown in
1097 defendant's Exhibit 14:

DEFENDANT'S EXHIBIT 14.

History of Price of Gas.

Prior to January 1, 1896, the price of gas in Des Moines was:

	Gross.	Discount.	Net.
Illuminating Purposes	$1.80	10¢	$1.70
Fuel Purposes:			
Less than 10,000 cu. ft.	1.80	30¢	1.50
Over 10,000 cu. ft.	1.80	55¢	1.25

City Ordinance No. 724, passed April 29, 1895, and again May 16, 1895, as amended by City Ordinance No. 751, passed February 7, 1896, fixed the rate as follows:

For All Purposes:			
1896 to 1897	1.40	10¢	1.30
1898 to 1899	1.35	10¢	1.25
1900 to 1901	1.30	10¢	1.20
1902, 1903 and 1904	1.25	10¢	1.15
1905	1.20	10¢	1.10
1906 to 1910 incl.	1.10	10¢	1.00

This last rate of $1.00 net is the one in force at the present time.

In the records of the Massachusetts Gas & Electric Light Commission from 1888 to 1910 we possess the data enabling us to investigate the effect of price upon the sales per capita of gas in Massachusetts.

In the subjoined tabulation of the facts derived from the above mentioned records, there is the unmistakable proof that, regardless of the size of the city, a notable increase in the sales of gas per capita always occurs in the year following a reduction of gas prices.

Further, so long as the price of gas is above $1.25 per M the

growth of the gas business is uncertain and irregular; but when it reaches $1.10 the growth of the sales of gas per capita is
1098 certain and astonishingly large.

It will further be noticed from a study of the subjoined statistics that between the years 1901 and 1910 there has also been a growth of the sales of gas per capita at a constant price, due in all probability to the increasing number and variety of apparatus intended to heat or to cook by gas when it reaches moderate prices.

Nevertheless, there appears to be a practical point of satiation, or of very slow increase in the sales of gas per capita ultimately reached for each price of gas; when a further notable increase in the sales of gas demand a reduction in its price.

Massachusetts Gas Companies Charging 80¢ *Per M* (1910), *Including From* 75 *to* 85 *Cents.*

Cities.	Prices.	Population 1910.	Sales M cu. ft.
Boston	80.1	706,301	4,373,611
Lynn	77.8	104,771	601,591
Worcester	80.5	145,986	637,570
		957,058	5,612,772

Sales Per Capita ..... 5760 cu. ft.

Massachusetts Gas Companies Charging 90¢ *per M* (1910), *Including from* 85 *to* 95 *Cents.*

Cities.	Prices.	Population 1910.	Sales M cu. ft.
Charlestown	90.5	64,595	238,230
Cambridge	87.8	158,924	669,228
Fall River	86.4	119,295	495,612
East Boston	92.7	40,940	222,960
Lawrence	90.2	110,170	417,865
Lowell	91.1	118,515	373,672
New Bedford	85.4	96,652	360,312
Springfield	89.6	88,926	509,222
		798,017	3,277,101
Average 8 Cities		99,752	
Sales Per Capita		4,106 cu. ft.	

1099 *Massachusetts Gas Companies Charging* $1.00 *per M* (1910), *Including from* 95¢ *to* $1.05.

Cities.	Prices.	Population 1910.	Sales M cu. ft.
Dedham	1.04	24,791	47,897
Haverhill	1.01	44,115	203,363
Malden	1.00	60,119	345,004
Newton	.977	88,034	323,053
N. Adams	1.03	23,226	55,251
Revere	1.03	18,219	91,192
Taunton	1.04	34,259	107,365
		292,763	1,173,125
Average 7 cities		41,823	
Sales per Capita		4,007 cu. ft.	

Massachusetts Gas Companies Charging $1.10 *per M* (1910), *Including from* $1.05 *to* $1.15.

Cities.	Prices.	Population.	Sales M cu.ft.
Adams	1.14	13,026	15,314
Brockton	1.11	56,878	192,826
Fitchburg	1.14	37,826	85,164
Gloucester	1.10	24,398	61,409
Salem	1.11	59,418	144,968
		191,546	499,681
Average 5 cities		38,309	
Sales per Capita		2,608 cu. ft.	

Massachusetts Gas Companies Charging $1.25 *per M* (1910), *Including from* $1.15 *to* $1.37½.

Cities.	Prices.	Population 1910.	Sales M cu. ft.
Arlington	1.29	26,038	29,717
Attleboro	1.20	16,215	48,958
Beverly	1.17	18,650	45,460
Blackstone	1.29	5,648	1,426
Chicopee	1.26	30,295	47,241
N'hampton	1.33	19,431	54,143
N'Attleboro	1.31	11,305	33,258
Ware	1.33	8,774	8,885
Williamstown	1.25	3,708	6,839
Pittsfield	1.16	35,689	111,985
		174,753	387,912
Average 10 cities		17,475	
Sales per Capita		2,220 cu. ft.	

1100 *Massachusetts Gas Companies Charging* $1.50 *per M* (1910), *Including from* $1.37½ *to* $1.62½.

Cities.	Prices.	Population 1910.	Sales M cu. ft.
Athol	1.59	8,536	8,492
Quincy	1.49	32,642	47,811
Clinton	1.48	13,075	19,072
Danvers	1.62	9,407	7,068
E. Hampton	1.60	8,524	11,040
Framington	1.55	12,948	20,856
Leominster	1.56	17,580	25,270
Marlboro	1.53	21,322	26,347
Milford	1.53	15,243	20,152
Natick	1.56	9,866	14,123
Newburyport	1.41	14,949	30,787
Norwood	1.57	8,014	13,754
Spencer	1.54	6,740	9,351
Webster	1.41	28.359	29,016
Woburn	1.41	15,308	14,996
		222,513	298,335
Average 15 cities		14,834	
Sales per Capita		1,341 cu. ft.	

Massachusetts Gas Companies Charging $1.75 *per M* (1910), *Including from* $1.62½ *to* $1.87½.

Cities.	Prices.	Population 1910.	Sales M cu. ft.
Amesbury	1.63	11,552	12,278
Greenfield	1.64	15,125	14,970
Marblehead	1.84	7,338	6,661
Plymouth	1.83	12,141	11,720
		45,156	45,629
Average 4 cities		11,539	
Sales per Capita		988 cu. ft.	

Massachusetts Gas Companies Charging $2.00 *per M* (1910), *Including from* $1.87½ *to* $2.12½.

Cities.	Prices.	Population 1910.	Sales M cu. ft.
Nantucket	2.06	2,962	3,378
Gardner	2.00	14,699	7,298
Ipswich	1.88	5,777	3,678
Stoneham	1.91	7,090	4,389
		30,528	18.743
Average 4 cities		7,632	
Sales per Capita		614 cu. ft.	

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1101 *Relation of the Price of Gas to per Capita Sales of Gas from Massachusetts Gas & Electric Light Com. Reports.*

Prices per M.	1901. Sales per capita.	1907. Sales per capita.	1910. Sales per capita.	Average sales per capita.
$2.25	283 cu. ft.	....	....	283 cu. ft.
2.00	584 "	722 cu. ft.	614 cu. ft.	640 "
1.75	843 "	898 "	988 "	910 "
1.50	1187 "	1395 "	1341 "	1308 "
1.25	1669 "	2535 "	2220 " (2)	2141 "
1.10	....	....	2608 "	2608 "
1.00	2393 "	3824 "	4007 "	3408 "
0.90	.... "	....	4106 "	4106 "
0.80	....	....	5760 "	5760 "

(2) In 1910 the $1.25 group ranges from $1.15 to $1.37½. In other years from $1.12½ to $1.37½.

Steady Increase Sales per Capita Due to the Passage of Time for $1.00 Gas.

In 1910 Sales Per Capita $1.00 gas.....	4,007 cu. ft.
In 1901 " " " " "	2,393 "
Nine years' increase per capita.....	1,614 "
One year's increase " "	179 "

Average Increase of per Capita Sales Due to Lowered Prices.

From $2.25 to $2.00.....	14	cu. ft. increase for	1 cent
" 2.00 to 1.75.....	11	" " "	" " "
" 1.75 to 1.50.....	16	" " "	" " "
" 1.50 to 1.25.....	33	" " "	" " "
" 1.25 to 1.00.....	51	" " "	" " "
" 1.00 to 0.80.....117		" " "	" " "

1102 Before applying the precedence derived from Massachusetts gas companies to the case of the city of Des Moines, it is necessary to note the different conditions controlling the cities of Massachusetts and Iowa.

Massachusetts cities are not growing rapidly in population, and therefore are not building extensions and new houses and factories as rapidly as they are being built in the State of Iowa.

The habits of the people, and their mental attitude in Massachusetts delay progress and development as compare with the development of the state of Iowa.

All of these conditions are in favor of a more rapid natural increase in gas sales in Iowa, and also productive of a readier response to any lowering of gas prices in increased sales per capita.

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For the year 1910, and with a price of 90 cents, we find the sales per capita, in Massachusetts to be 4,106 cubic feet.

For the year 1910, and with the price at $1.10, we find the sales of gas to be 2,608 cubic feet per capita. The difference between these is 1,498 feet; and dividing by 20¢ we find the increase of gas sales per capita in the State of Massachusetts to have been about 75 cubic feet for each cent reduction in price.

Further, in order to learn the annual increase in the sales of gas per capita at the constant price of $1.00, in Massachusetts, between the years of 1901 and 1910, we find the difference, as above shown, to be 1,614 cubic feet per capita—or an average in round figures of 180 cubic feet per year per capita.

The statement has heretofore been made that the safe capacity of the existing works of the Des Moines Gas Company is about 3,000,000 cubic feet per day, or, say 600,000,000 or more cubic feet per year. Its sales for 1910 amounted to 528,375,000 cubic feet.

And it is reasonable to assume that with the price of gas
1103 reduced to 90¢, as per ordinance of December 27, 1910, 600,000,000 cubic feet annual sales, or the works capacity, will be reached.

It is obvious that the only increase required to reach this capacity will be in oil, coal and coke for fuel and the purifying material. In general, all the other conditions of operation will remain as they are today.

From the operating expenses for the year ending December 31, 1910, we have the following figures:

Boiler Fuel Per M Cubic Feet	.0288¢
Generator Fuel	.1038¢
Oil	.1150¢
Purifying Labor & Supplies	.0022¢
Increased Cost of Gas Per M	.2490¢

Thus we see, speaking in round figures, that the cost of gas while the sales are increasing to 600,000,000 cu. ft. annually will be increased by 71,625,000 cubic feet at 25¢ per M, as shown in the subjoined computation:

Revenue for 600,000 M cu. ft. sales @ 90¢		$540,000.00
1910 Sales 528,375 cu. ft.		
Increase 71,625 cu. ft.		
Operating expense:		
528,375 cu. ft. @ 69.33¢	$366,322	
71,625 " " @ 25¢	17,906	384,228.00
Net Earnings		$ 155,772.00
Net Earnings Per M		25.96¢
Average Coct of Gas per M		64.04¢
Price per M at consumer's meter		90¢

Present Value of Fixed Investment.....	$1,401,087.00
Fixed Investment Per M Cu. Ft.....	2.37
Working Capital per M.....	.13
Total Investment Per M.....	2.50
26¢ Profit Per M gives.....	10¢
With the Price of Gas Fixed at.....	90¢

From the above it appears rational and practical to assume that within a brief period after the acceptance of the price of 90 cents per M cubic feet, that the Des Moines Gas Co. will be selling
1104 600,000,000 cubic feet of gas annually, and earning a 10% profit on its plant and working capital.

SECTION 99. Computation of Going and Market Value with Gas at 90 Cents Per M.

The going value is a matter of common consent and cannot be arbitrarily fixed independently of the attitude of investors.

For the sake of clear definition, I will say that my meaning of the going value of a works or factory is that amount by which it exceeds its present value of fixed plant and working capital, because of the excellence of its management, the fixity of its tenure of any business, and the room for development in the community which it serves, with, as a controlling consideration the profit at which this service is rendered.

Mr. Ewing Matheson, England's greatest authority on depreciation and valuation of factories, never mentions going values in connection with anything else but sales of the works themselves.

Apparently the idea of using going value in the fixing of rates has not yet been conceived by English business men.

If any man, engaged in competitive business, should attempt to use the possibly large going value of a successful concern as the basis of his profits, he would be committing commercial suicide, because his competitors would at once under-bid him.

For the public convenience our municipalities have made of late our public utilities into privileged parasites, having a monopoly of the gas, water, electricity or other commodities which they sell, and therefore have removed the healthy corrective of competition, frequently without doing their plain duty to the public in fixing a fair and reasonable rate for the commodity at the same time that they grant a monopoly in it.

1105 The idea of basing the going value of any gas company on its number of services, or on its los-es while building up business, or for that matter on the theoretical greater profit of a going concern for a given term of years over a new concern which is started at the beginning of that term of years, appears to me wholly irrational and impractical—because whatever might be the result of such far-fetched and fanciful computation it would have no effect whatever on an experienced investor.

The sub-joined computation gives the going value $352,000.00 and the total market value of $1,821,000.00 of the Des Moines Gas Company.

Computation of Going Value, With Gas at 90¢ Per M.

Franchise Price—Per M	.90¢
Price with 6% profit included	.86
Extra Profit—per M	.04
Total extra profit 528,375 M @ 4¢	$21,135.00
Capitalizing $21,135.00 @ 6%	352,250.00

We can then obtain the market value of these works as follows:

Present depreciated value	$1,401,000.00
Working Capital	68,000.00
Going Value	352,000.00
Total Market Value	$1,821,000.00

If the Des Moines Gas Company has been legitimately capitalized at $1,768,000.00 common stock, this stock should sell at about $103.00 or a little over it if purchasers had sufficient confidence in this company's management and the future growth of Des Moines, to accept less than 6% profit.

1106–1760 SECTION 100. Recapitulation:

The corroborative figures of cost quoted from the City's accountants now investigating the Des Moines Gas Company's accounts were all received subsequently to the completion of my appraisement.

The present land value $100,000, is estimated by parties in whose sound judgment and liberality I confide. The structural cost means the real money estimated to be required to build such a plant as the Des Moines Gas Works, at the times when it was built—and is $1,700,215.00.

The present value means the Structural Cost, less the residual depreciation, except in the case of abandoned property, and is $1,401,087.00, as existing in good repair.

The market value of the property of the Des Moines Gas Company is the value on a 6% profit basis, with the price of gas at 90¢ per M, and is $1,821,000.00.

For so long as the cost of raw material and productive labor does not rise, the straight price of 90 cents per M cubic feet of 24 candle power carburetted water gas, containing over 600 British Thermal Units per cubic feet, will give a fair and reasonable profit of six per cent, upon the market value of the Des Moines Gas Company's property, $1,821,000.00—which value exceeds both its structural cost and the present value.

Any future increases of sales of gas at 90 cents will have a tendency to raise the rate of profit above 6% and increase the market value of the Company's property above the present value.

Very respectfully,

WM. D. MARKS,
Consulting Engineer.

DES MOINES, IOWA, *August* 14, 1911.

1761 DEFENDANTS' EXHIBIT # 30.

J. P. B.

Duplicate.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

DES MOINES GAS COMPANY
vs.
THE CITY OF DES MOINES.

December 31, 1910.

Marwick, Mitchell & Co., Chartered Accountants, 79 Wall Street, New York.

1762 & 1763 INDEX.

1764 *Index to Report.*

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1. Scope of Investigation.
2. History of the Company.
3. Acquisition of Properties and Issue of Securities.
4. Rates Charged for Gas since March 1, 1906.
4. Factors Affecting Cost of Manufacture and Distribution of Gas.
5. Conclusions:
5. 1. Cost per M C. F. of Manufacture and Distribution of Gas.
6. 2. Allowance for Depreciation.
6. 3. Operations for the year 1910 adjusted.
8. 4. Returns of Net Revenue.
9. 5. Capital Invested in the Business and Return Yielded by Net Revenue.
10. Explanatory of Conclusions:
11. 1. Particulars of Expenses previously referred to.
11. Expense of Manufacturing.
12. Expense of Distribution.
13. Commercial Expense.
13. New Business.
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16. 2. Allowance for Depreciation.
17. Per Cent on Investment.
18. 3. Estimate of Net Revenue under Normal Conditions, by means of certain averages.
20. 5. Investment in Plant and Property and in Working Capital.
21. Summary showing Appraisal of Plant and Property at 1895 and Subsequent Additions.
25. Investment in Working Capital.

26. General:
27. Balance Sheet.
28. Operations from January 1, 1895, to December 31, 1910.
30. Surplus Income—July 1, 1886, to February 28, 1906.
31. Accident Claims.

1765 *Index to Exhibits and Schedules.*

From January 1, 1906, to December 31, 1910.

Exhibits.

"A." Income and Profit and Loss Account.
"B." Income and Profit and Loss Account, stated in cents per Thousand Cubic Feet Sold.
"C." Statement of Total Gross Revenue from Gas.
"D." Comparative Statement of Cost of Manufacturing and Distributing Gas.
"E." Comparative Statement of Cost per Thousand Cubic Feet of Manufacturing and Distributing Gas.
"F." Comparative Balance Sheets, as at March 1, 1906, February 28, 1907, 1908 and 1909, and December 31, 1909 and 1910.

Schedules.

"1." Quantity of Gas Manufactured, Sold, Used by Company and Unaccounted for, from January 1, 1906, to December 31, 1910.
"2." Comparative Monthly Statement of Quantity of Gas accounted for and unaccounted for, from January 1 1906, to December 31, 1910.
"3." Summary of Extensions and Improvements at Works from January 1, 1895, to December 31, 1910.
"4." General Statistics, for the years 1895 to 1910.
"5." Summary of Additions to Mains, Services, Meters and Street Lamps, from January 1, 1895, to December 31, 1910.
"6." Data relative to Standard Prices paid by Company.
"7." Office Salaries and Pay-roll Labor—December, 1910.

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1766 & 1767 REPORT.

1768 In the Circuit Court of the United States within and for the Southern District of Iowa, Central Division. In Chancery.

DES MOINES GAS COMPANY, Complainant,
vs.
THE CITY OF DES MOINES, Defendant.

CHICAGO, *August* 19, 1911.

To Robert O. Brennan, Esq., H. W. Byers, Esq., Solicitors for the Defendant, the City of Des Moines.

DEAR SIRS: In accordance with your instructions, we have made an examination of the accounts of the Des Moines Gas Company, Des Moines, Iowa, during the period from March 1, 1906, to December 31, 1910, for the purpose of determining the cost of manufacturing and distributing gas, and of its predecessor, the Capital City Gas Light Company, for two months to March 1, 1906, thereby completing a period of five years. We also made an examination to ascertain the actual amount expended in the construction of the plant and properties, used in the ordinary course of business, adopting as a basis the valuation prepared on January 1, 1895. Our report upon this examination is now submitted, together with the statements detailed in the index prefixed hereto.

1769 *History of the Company.*

The Des Moines Gas Company is one of a number of gas companies controlled by the United Gas Improvement Company of Philadelphia, and was organized under the laws of the State of Iowa on February 28, 1906, for the purpose of acquiring the properties and investment of the Capital City Gas Light Company, Des Moines, and also the plant, property, etc., of Mr. Jansen Haines and Mr. William B. Keffer, in the town of Valley Junction, Iowa.

The Des Moines Gas Company's predecessor, the Capital City Gas Light Company, was acquired by the controlling company on July 1, 1886, the total capital stock of $300,000.00 being acquired from Mr. William Sumner, as representing the old stockholders. This company continued the manufacture and sale of gas in the city of Des Moines until March 1, 1906, as at which date a proposition was made by Mr. W. H. Marshall to procure the conveyance and sale of the entire plant and other assets of the company to the Des Moines Gas Company, free from all debts and liability except $400,000.00 of First Mortgage Bonds with accrued interest thereon and the current liabilities of that company. The proposition also provided for the conveyance and sale of the Valley Junction plant.

The consideration to be granted by the Des Moines Gas Company in payment therefor was met by the issue at par of the following securities:

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$285,000.00 of First Mortgage 5% 20 year Gold Bonds dated March 1, 1906, being part of a total authorized issue of $1,500,000.00	$285,000.00
$800,000.00 of 6% Preferred Stock Contracts	800,000.00
22,490 Shares of $100.00 each of the Capital Stock of the Company, out of a total authorized issue of 22,500 shares	2,249,000.00
Total	$3,334,000.00

1770 Of the above securities the stockholders of the Capital City Gas Light Company acquired $240,000.00 5% bonds and the whole of the preferred stock contracts and shares. The debt due by that Company to the United Gas Improvement Company, not included in the above transaction, amounting to $105,526.49, was satisfied by the delivery of half of the bonds received, viz; $120,000.00. The net result to the shareholders of the old company was represented by the distribution pro rata of the remaining securities, viz:

	Par value.
$120,000.00 5% Bonds	$120,000.00
$800,000.00 6% Preferred Stock Contracts	800,000.00
22,490 Shares of Capital Stock	2,249,000.00
Total	$3,169,000.00

The remaining $45,000.00 of the Des Moines Gas Company bonds were issued in payment of the Valley Junction properties.

The whole of the capital stock of the new Company has been taken up, while the $400,000.00 6% bonds of the old Company already referred to, due January 1, 1907, were redeemed as at that date by the issue of a like amount of 5% bonds. Further issues of bonds against extensions and improvements carried out by the Company down to December 31, 1910 amount to $412,000.00. On the other hand, $389,000.00 of the preferred stock contracts have been repaid. The total capital indebtedness of the Company as at December 31, 1910 is therefore as follows:

5% First Mortgage Bonds	$1,097,000.00
6% Preferred Stock Contracts	411,000.00
22,500 Shares of $100.00	2,250,000.00
Total	$3,758,000.00

1771 At the date on which the Company acquired the assets of the old company, viz: March 1, 1906, the rate for gas supplied to consumers in Des Moines was $1.00 per thousand cubic feet as fixed by the city authorities in an ordinance dated April 29, 1895, and confirmed May 16, 1895, which regulated the rates to be charged as from January 1, 1896. These rates were as follows:

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1896 and 1897	$1.40	less 10¢ Discount	$1.30
1898 and 1899	1.35	"	1.25
1900 and 1901	1.30	"	1.20
1902, 1903 and 1904	1.25	"	1.15
1905	1.20	"	1.10
1906 to 1910	1.10	"	1.00

In December 1910 the council passed an ordinance fixing the rate to be charged and collected for gas by any person, firm or corporation supplying or distributing gas to the City of Des Moines or its inhabitants at 90 cents for each one thousand cubic feet.

In according consideration to the question of the reasonableness of 90 cents per thousand cubic feet as a price for gas, several important factors must be taken into account. These, all having a direct bearing on the subject, may be briefly presented as follows:

1. At what cost, exclusive of depreciations, subsequently referred to, and interest on bonded and floating indebtedness, was gas manufactured and distributed in the City of Des Moines during the period of five years ended December 31, 1910?

2. What allowance must be added to this cost of manufacture and distribution to provide for the wear and tear, and probable inadequacy and obsolescence, of the plant necessary for the conduct of the business?

3. Applying the adjusted rate of 90 cents to sales in Des
1772 Moines, allowing the higher prices to remain for Valley Junction, and also applying the adjusted costs, what would have been the result of the operations for the year 1910?

4. Upon what capital investment would the excess of the ordinance price of 90 cents per thousand cubic feet over the adjusted cost of manufacture and distribution, including depreciation, give a return, using varying rates of interest?

5. What capital is invested in the business of the Des Moines Gas Company, dealing with the question under two classifications, viz:

(*a*) Investment in actual plant and property or fixed investment.

(*b*) Amount required for working capital.

Conclusions.

Having outlined the points to be duly accorded consideration, we have now to submit our conclusions upon the same:

1. For the period of five years from January 1, 1906 to December 31, 1910 the cost, stated upon the basis of sales per thousand cubic feet of manufacturing and distributing gas in the City of Des Moines, including Valley Junction, a suburb located a few miles from the Capital, exclusive of interest on bonded and floating indebtedness and depreciation on the plant, is as set forth in the following statement. With the exception of several items of an extraordinary nature, not applicable to the operations of the Company during the period under review, and now excluded and also to the inclusion of certain expenses not charged, this statement is as shown by the books.

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Expense of	Two months to Feb. 28, '06.	Year ended Feb. 28 or 29			Ten months to Dec. 31, '09.	Average four years to Dec. 31, '09.	Year ended Dec. 31, '10.	Average five years to Dec. 31, '10.
		1907	1908	1909				
Manufacturing	¢36.82	36.89	35.13	32.98	30.75	34.02	29.76	33.04
Distribution	5.82	4.67	5.44	5.32	6.60	5.52	8.49	6.21
Commercial Expense	7.92	7.56	7.31	7.57	8.24	7.67	9.01	7.98
New Business	4.38	4.76	4.36	2.96	3.93	3.98	4.54	4.11
General Expense	1.36	2.68	2.19	2.49	3.78	2.72	4.90	3.22
Taxes	6.14	5.56	6.87	6.52	7.66	6.65	7.22	6.78
Leakage	4.70	2.78	2.20	1.93	1.99	2.26	1.35	2.04
Miscellaneous Sales	*.01	*.04	*.01	*.04	*.03	*.03	*.08	*.04
Totals and Averages ...	¢67.13	64.86	63.49	59.73	62.92	62.79	65.19	63.34

[* In red in copy.]

1773 Should the ordinance of December 1910, fixing the price of gas at 90 cents per thousand cubic feet, be held effective, the compensation payable to the City of Des Moines will be upon the basis of one and eight tenths cents per thousand cubic feet of sales and not two cents, as at present and as included in the foregoing statement. This adjustment of two tenths of a cent per thousand cubic feet sold in Des Moines will slightly reduce the above costs, as follows:

	Two months to Feb. 28, '06.	Year ended Feb. 28 or 29. 1907.	1908.	1909.	Ten months to Dec. 31, '09.	Average four years to Dec. 31, '09.	Year ended Dec. 31, '10.	Average five years to Dec. 31, '10.
As Above	¢67.13	64.86	63.49	59.73	62.92	62.79	65.19	63.34
Reduction due to Modified Price	.20	.20	.20	.20	.20	.20	.20	.20
Adjusted Cost ..	¢66.93	64.66	63.29	59.53	62.72	62.59	64.99	63.14

2. To these costs must be added an allowance in respect of not only the wear and tear connected with the operation of the plant, but also providing for its probable inadequacy and obsolescence. In our opinion, an allowance of six cents per thousand cubic feet sold may be regarded as reasonable for three purposes and this we now add to the costs previously determined, as follows:

	Two months to Feb. 28, '06.	Year ended Feb. 28 or 29. 1907	1908.	1909.	Ten months to Dec. 31, '09.	Average four years to Dec. 31, '09.	Year ended Dec. 31, '10.	Average five years to Dec. 31, '10.
Adjusted Cost, as above.	¢66.93	64.66	63.29	59.53	62.72	62.59	64.99	63.14
Depreciation	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Total Cost, including Depreciation.....	¢72.93	70.66	69.29	65.53	68.72	68.59	70.99	69.14

3. The operations of the Company for the year ended December 31, 1910, adjusted to give effect to "ninety cent" gas in the City of Des Moines, allowing a higher rate to prevail in Valley Junction, and also adjusting the cost of manufacture and distribution to include a depreciation charge, but to exclude certain extraordinary charges, are as follows:

Adjusted Statement of Operations.

1774 *Adjusted Statement of Operations*—Continued.

	Before adjustment. Cubic feet.	Amount.		After adjustment. Amount.
Sales in:				
Des Moines....	521,486,354	$552,345.85	at 90 cents	$469,337.72
Valley Junction	6,889,100	10,579.02		10,579.02
Used at Works.	3,615,600	3,615.60		3,615.60
Total Sales..	531,991,054	566,540.47		483,532.34
Deduct: Discount.....		27,647.47		1,000.00
Total Revenue.....		538,893.00		482,532.34
Operating Expenses—Net...		346,785.35		377,647.36
Net Revenue, available for Interest and other Charges		$192,107.65		104,884.98

In determining this result we have accepted the "gas used at works" at the figure stated by the Company on the basis of "dollar gas". Any change made would affect both the income and expenses but not the net result. We understand the new ordinance provides for gas being sold at 90 cents without any additional allowance in respect of non payment. We have therefore so entered it and excluded all discount except an arbitrary sum estimated as being that applicable to Valley Junction. This return of $104,884.98 is equivalent to a return of 19.71 cents per thousand cubic feet sold.

The operating expenses were adjusted upon the following basis:

As Actually Recorded.....	$346,785.35
Add: Depreciation—6 cents per thousand on sales of 531,991,054 Cubic Feet.....	31,919.46
Carried Forward.....	$378,704.81

1775 *Adjustment of Operating Expenses*—Continued.

Brought Forward.....	$378,704.81
Deduct: Adjustment of City Tax.....	1,057.45
Operating Expenses—As Adjusted.....	$377,647.36

A careful examination of Conclusion No. 1, recording the average expenses of operating this property for five years would indicate that those of the year ended December 31, 1910 are abnormally high and therefore cannot be regarded as indicative of true conditions. We observe that Complainant's witness, Mr. William J. Hagenah, agrees, at least in part, with this Conclusion, and in his computation excludes certain improper charges to operating expenses. The average distributing and other expenses for the four years immediately preceding 1910 and also for the five years including 1910, can more reasonably be regarded as indicative of normal conditions. We have therefore prepared computations, to be afterwards explained, taking the manufacturing cost of 1910 and adding the average distribution and other expenses just referred to. Adopting those results, which we have adjusted to include depreciation and gas at a selling price of 90 cents in Des Moines, we have a net revenue, available for interest and other charges of $145,173.06 under the first method and $135,863.22 under the second, the latter including the 1910 expenses in the average. These returns are equivalent to 27.28 and 25.53 cents per thousand cubic feet sold, respectively.

4. The net revenue ascertained in the preceding paragraph would yield the return set forth in the following table:

1776 *Returns of Net Revenue*—Continued.

Percentage of return.	Capital on basis of income of—		
	$104,884.98	145,173.06	135,863.22
Per M C. F. sold	¢19.71	¢27.28	¢25.53
%5	2,097,701.60	2,903,461.20	2,717,264.40
5½	1,907,001.45	2,639,510.18	2,470,240.36
6	1,748,084.66	2,419,551.00	2,264,387.00
6½	1,613,616.61	2,233,431.70	2,090,203.39
7	1,498,358.30	2,073,900.86	1,940,903.14
7½	1,398,467.73	1,935,640.80	1,811,509.60
8	1,311,063.50	1,814,663.25	1,698,290.25

It might be opportune at this time to point out that the sales for the seven months to July 31, 1911 are considerably in excess of those for the corresponding months in 1910. The increase amounts to 6.16%, ascertained as follows:

	1911.	1910.	Increase. Decrease.	Percentage.
January	55,897,877	48,485,753	7,412,124	15.29
February	48,729,565	44,189,507	4,540,058	10.27
March	45,299,650	45,005,147	294,503	.65
April	44,273,224	40,333,915	3,939,309	9.77
May	43,022,181	41,014,962	2,007,219	4.89
June	39,588,566	41,909,816	2,321,250	5.54
July	36,527,004	34,257,787	2,269,217	6.62
Total and Average.	313,338,067	295,196,887	18,141,180	6.16

[Boldface words and figures in red ink in copy.]

5. The capital invested in the business of the Des Moines Gas Company amounts to $1,550,766.58, analyzed as follows:

In Actual Plant and Property	$1,481,813.67
In Working Capital	68,952.91
Total	$1,550,766.58

1777 It has been contended and with a certain amount of reason that the actual investment in the plant should be increased, because of the omission of certain charges. This is so, but the fact must not be overlooked that any increase in this amount would correspondingly decrease the operating expenses, increasing the margin of profit available to pay interest and other fixed charges.

Should this plant and property be appraised upon a reproductive value a certain increase would *fall* to be made owing to the higher prices prevailing at this time than when the property was erected.

In determining the foregoing amount nothing has been added in respect of what has in this case been described as "going values."

Applying the net revenues referred to in Conclusion 4, we find that upon this investment of $1,550,766.58 the following returns have been earned for the year ended December 31, 1910:

Bases—"Ninety Cent" Gas and 6 Cents Depreciation:

	Net revenue.	Per cent of investment.
Actual Manufacturing and Operating Expenses for 1910	$104,884.98	6.76
Actual Manufacturing for 1910 and Average Operating Expenses for four years 1906-1909	145,173.06	9.36
Actual Manufacturing for 1910 and Average Operating Expenses for five years 1906-1910	135,863.22	8.76

Explanatory of Conclusions.

Conclusion No. 1.—We have prepared and submit in Exhibits "D" and "E" particulars of the operations from January 1, 1906 to December 31, 1910, a period of five years. The results, stated on the basis of per thousand cubic feet manufactured and sold are presented in summarized form on page 5 of this report. Be-
1778 fore submitting details of each classification of expense we might explain that from the two months' period to February 28, 1906, as shown by the books, we eliminated the expenditure on accidents, that expense being applicable to a prior period. To the expenses of the year 1909 we added the corporation tax paid in 1910, while in 1910 we excluded the amount applicable to 1909, but added that paid in 1911 applicable to 1910. From the expenses of 1910 we excluded the amount expended, connected with the

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regulation of the price of gas. This expenditure, as also interest charges, cannot be regarded as directly applicable to the ordinary course of business, and therefore should not be included in our present computations.

The following summaries present particulars of the expenses included under the various headings of the classification on page 5:

Manufacturing.—The expense of manufacturing gas—all water gas—stated on the basis of quantity produced is as follows:

	Two months, to Feb. 28, '06.	Year ended Feb. 28 or 29.			Ten months, to Dec. 31, '09.	Average four years, to Dec. 31, '09.	Year ended Dec. 31, '10.	Average five y'rs, to Dec. 31, '10.
		1907.	1908.	1909.				
Manufacturing	¢.98	.49	.52	.57	.66	.58	.68	.60
Boiler Fuel	2.25	2.22	2.12	2.04	2.47	2.21	2.88	2.36
Expense Works	1.21	.91	.94	1.13	1.25	1.06	1.37	1.13
Generator Fuel	10.45	11.41	10.45	11.60	10.78	11.04	10.31	10.87
Manufacturing Labor..	1.92	1.87	1.80	1.83	1.99	1.87	1.92	1.88
Oil	18.11	17.47	17.98	14.91	12.25	15.75	11.49	14.78
Purification Supplies...	....	.23	.26	.13	.33	.23	.13	.21
Purification Labor	.10	.03	.08	.11	.10	.08	.09	.08
Repair Works	2.06	2.32	1.46	1.21	1.91	1.71	2.55	1.90
Water Tax	.03	.27	.23	.21	.19	.22	.18	.21
	37.11	37.22	35.84	33.74	31.93	34.75	31.60	34.02
Less: Residuals.....	.29	.33	.71	.76	1.18	.73	1.84	.98
Total.....	¢36.82	36.89	35.13	32.98	30.75	34.02	29.76	33.04

It will be observed that in each year of the period under review the cost of manufacture shows a steady decline as compared with the preceding year.

It might be mentioned that during the year 1910 extensive repairs were made at the works. Stated in dollars and cents the repairs during the period under review were as follows:

1779 *Repairs During Period Under Review—Continued.*

Two months to February 28, 1906	$1,370.91
Year to February 28, 1907	9,699.99
Year to February 29, 1908	6,835.23
Year to February 28, 1909	5,966.71
Ten months to December 31, 1909	8,213.18
Year to December 31, 1910	14,193.78
Total	$46,279.80

Apart from sundry repairs the following are the more important charges entered in this account during the year 1910:

Remodelling Water Gas Apparatus		$3,497.89
Less: Charged to Extensions and Improvements		1,219.04
		2,278.85
Repairing Holder Tank and Holders		523.14
Repairing Boilers		487.72
Repairing Calorimeter and Sundries		196.10
Expended on Coke Shed and Apparatus	$4,811.60	
Less: Charged to Extensions and Improvements	3,311.60	
		1,500.00
Total		$4,985.81

Distribution.—Stated upon the basis of per thousand cubic feet sold the distribution expenses are as follows:

	Two months, to Feb. 28, '06.	Year ended Feb. 28 or 29, 1907.	1908.	1909.	Ten months, to Dec. 31, '09.	Average four years, to Dec. 31, '09.	Year ended Dec. 31, '10.	Average five y'rs, to Dec. 31, '10.
Distribution	¢.64	.57	.56	.61	.72	.62	.72	.64
Complaint Expense	.61	.57	.45	.48	.50	.50	.63	.53
Distribution Office Expense	.85	.67	.82	.68	1.21	.84	1.14	.91
Gratuitous Work	1.11	.47	.55	.38	.47	.49	1.25	.66
Repairs:								
Mains	.91	.73	1.00	.68	.95	.84	1.76	1.06
Services	.26	.12	.11	.20	.25	.17	.98	.36
Meters	.33	.59	.78	1.02	1.11	.86	.98	.89
Setting and Removing Meters.	.97	.82	1.04	1.13	1.33	1.09	1.01	1.07
Street Mains Abandoned	.03	.13	.13	.14	.06	.11	.02	.09
Expense—Storeroom and Stable	.11	....	....	....	....	....	....	....
Total	¢5.82	4.67	5.44	5.32	6.60	5.52	8.49	6.21

1780 The very large additional cost of the year 1910 over the preceding year and also over the average of the four years immediately prior thereto calls for special comment.

The reason for the increased expense of "gratuitous work" is not apparent from the records. A special inspector appears to have been added to this pay-roll during 1910, and generally, a more liberal policy seems to have prevailed.

The repairing of mains seems to have been done on a more extensive scale during 1910 and this expense includes $3,171.57 in respect of the cost of lowering 16" main (authorization 241) below river, between works and west side. The total cost of this work was $4,302.08, of which $1,130.51 was charged to plant account. Apart from this particular item, the charges to this account appear to be heavy in comparison with previous years.

The repairs to services are also heavy in 1910 as compared with preceding years. In 1910 this work cost .98 cents per thousand cubic feet against an average of .17 cents for the preceding four years. The large increase is partly explained by an expenditure of approximately $3,000.00 in regrading and resetting at East 6th, Des Moines Street and other streets, required in consequence of the City altering the streets.

Commercial Expense.—The following is a summary of the commercial expense during the period under review, stated in cents per thousand feet sold:

	Two months to Feb. 28, '06.	Year ended Feb. 28 or 29, 1907.	1908.	1909.	Ten months to Dec. 31, '09.	Average four years to Dec. 31, '09.	Year ended Dec. 31, '10.	Average five years to Dec. 31, '10.
Commercial Expense	¢.38	.33	.31	.31	.31	.32	.36	.33
Expense Collection	1.03	.92	.82	1.00	.90	.91	1.20	.98
Expense Office	2.05	2.50	2.08	2.09	2.57	2.29	2.85	2.42
Office Salaries	4.46	3.81	4.10	4.18	4.46	4.15	4.60	4.25
Total	¢7.92	7.56	7.31	7.57	8.24	7.67	9.01	7.98

The increased expenses during 1910 appear to be due to a larger collection force being employed and to the additional cost of maintaining the new office. During 1910 an adding machine and a calculating machine were purchased at a cost of 623.64 and $225.00 respectfully, and charged to this account.

1781 New Business.—A summarized statement of the expenses of this department is as follows:

New Business—Continued.

	Two months to Feb. 28, '06.	Year ended Feb. 28 or 29.			Ten months to Dec. 31, '09.	Average four years to Dec. 31, '09.	Year ended Dec. 31, '10.	Average five years to Dec. 31, '10.
		1907.	1908.	1909.				
New Business	¢.38	.33	.39	.38	.46	.38	.59	.44
Advertising	1.20	.92	.95	.70	1.11	.92	1.29	1.01
Appliance Demonstrations	.65	.72	.47	.35	.27	.45	.32	.42
Expense Soliciting	1.56	2.19	1.56	1.14	1.64	1.61	1.81	1.66
Gas Appliances	1.08	....	*.11	*.16	*.53	*.15	*.41	*.22
Gas Engine Expense	*1.22	.24	.15	.04	.04	.07	.01	.06
House Fitting Expense	*.37	.06	.66	.04	*.02	.17	*.03	.12
Gas Arc Rental and Maintenance	.62	.28	.27	.45	.95	.49	.94	.59
Gas Stove Depreciation	.48	.02	.02	.02	.01	.04	.02	.03
Total	¢4.38	4.76	4.36	2.96	3.93	3.98	4.54	4.11

[* In red ink in copy.]

The increased advertising expense of 1910 appears to be due to the inclusion of larger charges by the United Gas Improvement Company of Philadelphia, in respect of advertising services rendered.

The increased soliciting expense is explained by largely increased salaries in 1909 and 1910.

The gas arc rental and maintenance expense has increased owing to greater depreciation having been charged off during 1910, than in earlier years, and also to a falling off in rental receipts.

General Expense.—The following is a summary of this expense for the five years under review:

General Expense:	Two months to Feb. 28, '06.	Year ended Feb. 28 or 29. 1907.	1908.	1909.	Ten months to Dec. 31, '09.	Average four years to Dec. 31, '09.	Year ended Dec. 31, '10.	Average five years to Dec. 31, '10.
Accident and Damages	....	.11	.13	.65	.52	.35	.49	.38
Association Meetings	....	.12	.08	.22	.36	.19	.22	.20
Expense General	¢.15	.38	.35	.25	.37	.33	.28	.32
Expense Extra	.05	.49	.31	.44	.84	.50	.75	.56
Insurance	.67	.64	.55	.33	.37	.47	.35	.44
Litigation	.07	.06	.06	.09	.21	.10	.19	.12
Fire Damage	....	.13	....	....	....	.03	....	.02
Uncollectible Bills	.16	.88	.67	.51	.60	.64	.62	.64
Street Lamp Operating	.26	*.13	.04	....	.10	.01	.12	.04
Salaries—General	....	....	....	....	.41	.10	1.88	.50
Total	¢1.36	2.68	2.19	2.49	3.78	2.72	4.90	3.22

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1782 Only two accounts in this classification call for special comment. "Expense Extra" appears to contain all expenditures which cannot be definitely assigned to any other account. These expenses include subscriptions to charity, to a committee known as the Greater Des Moines Committee, for capital stock of the Coliseum Company (more properly chargeable to Investment Account, but which we have permitted to stand as an expense) bonuses to manager, and other expenses, all apparently of a special nature. For the five years these expenses aggregated $12,733.10, as follows:

Two Months ended February 28, 1906	$27.50
Year ended February 28, 1907	1,914.50
Year ended February 29, 1908	1,371.65
Year ended February 28, 1909	2,062.31
Ten Months ended December 31, 1909	3,392.36
Year ended December 31, 1910	3,964.78
Total	$12,733.10

The second account calling for comment is that known as "Salaries General." From November 1, 1909, the Des Moines Company has paid salaries to certain of its officers, all we understand, non-resident in Des Moines. The amount charged during November and December 1909 amounted to $1,666.66, while for the year 1910 these salaries aggregated $10,000.00, being paid to the following gentlemen:

	Per annum.
S. T. Bodine, President	$2,500.00
Walton Clark, Vice-President	1,800.00
Lewis Lillie, Treasurer	1,600.00
W. F. Douthert, Secretary	1,600.00
J. A. Pearson, Purchasing Agent	2,500.00
Total	$10,000.00

Prior to November 1, 1909 no salaries were paid to those officials.

1783 In the accounts submitted by the Company was included a charge of $5,935.18 in respect to what was called "Replacement values—Rate Regulation Expense." This account included charges by the United Gas Improvement Company for draftsmen and engineers for time spent on special work for the Des Moines Company. As this expense is not an annually recurring one and is not directly connected with the operations of the business, we have excluded it from operating expenses. In fixing a reasonable rate for gas in the City of Des Moines, such special expenses should not be overlooked.

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Taxes.—A summary of the taxes charged during the period under review, but calling for no special comment, is as follows:

	Two months to Feb. 28, '06.	Year ended Feb. 28 or 29.			Ten months to Dec. 31, '09.	Average four years to Dec. 31, '09.	Year ended Dec. 31, '10.	Average five years to Dec. 31, '10.
		1907.	1908.	1909				
Taxes:								
General	¢3.73	3.59	4.88	4.50	5.66	4.64	5.24	4.77
Special city tax	2.41	1.97	1.99	2.02	2.00	2.01	1.98	2.01
Total	¢6.14	5.56	6.87	6.52	7.66	6.65	7.22	6.78

Leakage.—Stated upon the basis of cents per thousand cubic feet of sales the leakage may be stated as follows:

Two Months to February 28, 1906	¢4.70
Year to February 28, 1907	2.78
Year to February 29, 1908	2.20
Year to February 28, 1909	1.93
Ten Months to December 31, 1909	1.99
Average preceding four years	2.26
Year to December 31, 1910	1.35
Average for five years	¢2.04

We agree with the opinion expressed by the Complainant's witness, Mr. William J. Hagenah, that the operating expenses include charges properly applicable to plant account. The fact must not be overlooked, however, that any readjustment of these charges would have the effect of increasing the plant account.

Conclusion No. 2.—To the cost of manufacturing and distributing gas, as ascertained from the books of the Company, there must be added an allowance in respect of the depreciation of the property and plant, due not only to the wear and tear incident to their
1784 operation, but also to their probable loss through inadequacy and obsolescence. In considering the amount of the depreciation allowance, attention must be directed to the condition in which the plant has been maintained, through the expenditure on repairs and general maintenance. The factors of renewals, repairs and depreciation must be regarded together, and an aggregate annual allowance averaging from ten to twelve cents per thousand cubic feet of sales would, in our opinion, be reasonable. To the actual expenditures on renewals and repairs, as shown by the following statement, we have added six cents per thousand cubic feet of sales in respect of depreciation.

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Repairs on—	Two months to Feb. 28, '06.	Year ended Feb. 28 or 29, 1907.	1908.	1909.	Ten months to Dec. 31, '09.	Average four years to Dec. 31, '09.	Year ended Dec. 31, '10.	Average five years to Dec. 31, '10.
Works	¢2.32	2.49	1.55	1.28	2.03	1.82	2.67	2.02
Mains	.91	.73	1.00	.68	.95	.84	1.76	1.06
Services	.26	.12	.11	.20	.25	.17	.98	.36
Meters	.33	.59	.78	1.02	1.11	.86	.98	.89
Setting and Removing Meters	.97	.82	1.04	1.13	1.33	1.09	1.01	1.07
Street Mains Abandoned	.03	.13	.13	.14	.06	.11	.02	.09
Total Repairs	4.82	4.88	4.61	4.45	5.73	4.89	7.42	5.49
Depreciation	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Total	¢10.82	10.88	10.61	10.45	11.73	10.89	13.42	11.49

This depreciation of six cents per thousand cubic feet is equivalent to the following allowances. Based upon the investment in the property as shown by the following table, covering the period from January 1, 1895 to December 31, 1910, the position is as follows:

	Investment.		Depreciation.	
	Additions.	At close of period.	6 cents per M C. F.	% on investment.
Valuations—January 1, 1895	$429,426.83	429,426.83	.....	....
For Year ended:				
December 31, 1895	8,903.15	438,329.98	3,666.00	.836
" 1896	42,197.41	480,527.39	4,586.22	.954
" 1897	61,550.37	542,077.76	5,037.06	.929
" 1898	30,559.29	572,637.05	5,616.78	.981
" 1899	45,967.51	618,604.56	6,589.26	1.065
Carried Forward		$618,604.56	25,495.32	

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	Investment.		Depreciation.	
	Additions.	At close of period.	6 cents per M C. F.	% on investment.
Brought Forward	.....	618,604.56	25,495.32	....
For Year ended:				
December 31, 1900	$34,323.27	652,927.83	8,515.86	1.304
" 1901	110,775.17	763,703.00	9,659.40	1.265
" 1902	55,638.14	819,341.14	12,405.90	1.514
" 1903	86,470.66	905,811.80	14,654.70	1.618
" 1904	45,932.04	951,743.84	17,544.42	1.843
" 1905	115,566.43	1,067,310.27	20,064.30	1.880
Two Months to February 28, 1906	10,877.46	1,078,187.73	3,543.55	1.972
Year ended February 28, 1907	298,914.28	1,377,102.01	23,333.55	1.694
Year ended February 29, 1908	93,715.81	1,470,817.82	26,512.68	1.803
Year ended February 28, 1909	41,818.00	1,512,635.82	27,958.22	1.848
Ten Months to December 31, 1909	94,118.98	1,606,754.80	24,254.64	1.811
Year ended December 31, 1910	120,920.87	1,727,675.67	31,919.46	1.841
Total			$245,862.00	

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The percentage of annual depreciation is calculated upon the book value of all fixed assets, both depreciable and non-depreciable. Were the latter excluded and an allowance made for the residual value of the plant the rate would be correspondingly higher. Further, the depreciation allowance has been calculated upon the closing balance of each year and not upon the opening balance, plus the average additions for the year.

The question of this depreciation and also the book value of the property will be referred to in a subsequent section of this report.

Conclusion No. 3.—As explained on page 8 of this report, the distributing and other expenses of the year 1910 cannot be regarded as indicative of normal operating conditions. To obtain a reasonable estimate of the net revenue operating under normal conditions, and including sales at 90 cents per thousand cubic feet and an allowance for depreciation, we have decided to accept the average expenses of operating for two periods, as follows:

a. Four Years ended December 31, 1909.
b. Five Years ended December 31, 1910.

1786 The following is a summary of the position, applying these results in comparison with the actual results:

	Actual 1910.	Estimate.	
		No. 1.	No. 2.
Manufacturing—Actual Cost ...	¢29.76	29.76	29.76
Other Expenses:			
Distribution	8.49	5.52	6.21
Commercial Expense	9.01	7.67	7.98
New Business	4.54	3.98	4.11
General Expense	4.90	2.72	3.22
Taxes	7.22	6.65	6.78
Leakage—Actual	1.35	1.35	1.35
Miscellaneous Sales	*.08	*.03	*.04
Total Other Expenses..	35.43	27.86	29.61
Total	¢65.19	57.62	59.37

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Applying these estimated costs the operations of the year 1910 would have resulted as follows:

	Table No. 1. Four years, average.	Table No. 2. Five years, average.
Revenue, as already stated basis of 90 cents for Des Moines....	$482,532.34	482,532.34
Operating Expenses:		
Manufacturing, year 1910, actual	165,466.44	165,466.44
Distribution and other expenses on sales of 531,991,054 feet..	141,030.83	150,340.67
Depreciation, 6 cents per 1,000 on sales of 531,991,054 feet..	31,919.46	31,919.46
Adjustment of City Tax to 90 cent gas	*1,057.45	*1,057.45
Total Operating Expenses	337,359.28	346,669.12
Estimated Net Revenue, available for interest and other charges.....	$145,173.06	135,863.22

Stated in cents per thousand cubic feet this statement is 1787 as follows:

	Table No. 1.	Table No 2.
Revenue	¢90.70	90.70
Operating Expenses—as above.....	57.62	59.37
Depreciation	6.00	6.00
Adjustment of City Tax.....	*.20	*.20
Total Expenses	63.42	65.17
Estimated Net Revenue.....	¢27.28	25.53

Conclusion No. 4.—This conclusion, as presented on pages 8 and 9, does not call for further comment.

Conclusion No. 5.—This conclusion deals with the investment in plant and property and in working capital. We submit that the investment at December 31, 1910 amounted to $1,550,766.58, analyzed as follows:

In Actual Plant and Property.....	$1,481,813.67
In Working Capital	68,952.91
Total	$1,550,766.58

[*In red ink in copy.]

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The methods by which these results were determined may be presented briefly as follows:

Investment in Plant and Property.—On January 1, 1895 an appraisal of all the properties of the Company, then known as the Capital City Gas Light Company, was prepared and we have accepted that appraisal as the basis of our computations:

Appraisal—January 1, 1895	$429,426.83
Additions—January 1, 1895 to December 31, 1910—as per books	1,133,248.84
Cost of Valley Junction Property—paid in Bonds	45,000.00
Allowance for Gas Holder—not included in books	120,000.00
Appraisal, plus Subsequent Additions—Forward	$1,727,675.67

1788 *Investment in Plant and Property*—Continued.

Appraisal, plus Subsequent Additions—Forward	$1,727,675.67
Deduct: Depreciation of six cents per thousand cubic feet sold 4,097,700 M	245,862.00
Depreciated Value of Property	$1,481,813.67

The following summary presents particulars of the appraisal of January 1, 1895 and also of the additions distinguishing between the period prior to February 28, 1906 and that subsequent thereto:

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	Total.	Appraisal Jan. 1, 1895.	Total.	Additions. Jan. 1, 1895, to Feb. 28, 1906.	Additions. Mar. 1, 1906 to Dec. 31, 1910.
Tank and Holder No. 1	$15,000.00	15,000.00	.....	.....	.....
Tank and Holder No. 2	33,356.64	33,356.64	.....	.....	.....
Tank and Holder No. 3	40,057.41	40,057.41	.....	.....	.....
Old Gas Works	25,000.00	25,000.00	.....	.....	.....
Real Estate	35,765.26	8,916.00	26,849.26	25,200.00	1,649.26
Office Furniture	11,852.38	358.07	11,494.31	.....	11,494.31
Gas Building and Machinery	252,104.73	91,123.50	160,981.23	75,220.84	85,760.39
Meters	187,755.93	16,849.17	170,906.76	102,541.83	68,364.93
Street Mains	649,750.66	120,512.29	529,238.37	286,552.25	242,686.12
Services	258,794.17	35,504.82	223,289.35	150,796.07	72,493.28
Street Lamp Extension and Improvement	25,335.43	14,845.87	10,489.56	8,449.91	2,039.65
Water Gas Plant	27,903.06	27,903.06	.....	.....	.....
Total as per Books	1,562,675.67	429,426.83	1,133,248.84	648,760.90	484,487.94
Add:					
Valley Junction Property acquired in exchange for Bonds	45,000.00	.....	45,000.00	.....	45,000.00
Estimated Cost of Holder of which no record appears on Books	120,000.00	.....	120,000.00	.....	120,000.00
Total	1,727,675.67	429,426.83	1,298,248.84	648,760.90	649,487.94

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1789 The property of the Company is at present recorded on the books at $3,853,975.22, an amount $2,126,299.55 in excess of the original appraisal and cost as determined by us. The following statement will explain the difference between these two amounts:

The present Book Value of the Properties is.....		$3,853,975.22
Add: Depreciation written off as at June 30, 1909.		264,108.78
Book Cost to the Des Moines Company.....		4,118,084.00
Deduct:		
Book Value at January 1, 1895 in excess of Original Appraisal at that date:		
Water Gas Plant and Patents:		
As per Books.....	$200,000.00	
As appraised.....	27,903.06	
	172,096.94	
"Construction Account" at January 1, 1895 representing Stock issued without consideration.....	39,371.22	
	211,468.16	
Items charged to Plant Account during period to February 28, 1906, now excluded:		
Capital City Electric Light Company, Stock—Cost thereof less dividends received.....	2,553.00	
Transferred from Profit and Loss Account on May 1, 1897.....	131,744.44	
	134,297.44	
Appreciation of Plant on transfer to Des Moines Gas Company:		
Book Value of Plant as appearing on Des Moines Gas Company Books, March 1, 1906.....	3,592,723.24	
Less: Valley Junction Properties purchased, included.....	45,000.00	
Net Value of Capital City Gas Light Company Plant.....	3,547,723.24	

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Value thereof as appearing on Capital City Gas Light Company Books, February 28, 1906.....	1,423,953.33	
	2,123,769.91	
Carried Forward.....	$2,469,535.51	4,118,084.00

1790 *Property of the Company*—Continued.

Book Cost to the Des Moines Company.

Brought Forward.....		$4,118,084.00
Deductions, Continued:		
Brought Forward.....	$2,469,535.51	
Bond Discount and Reorganization Expenses charged to Plant in Des Moines Gas Company Books....	40,872.82	
		2,510,408.33
Actual Cost of Property as shown by Des Moines Gas Company Books.....		$1,607,675.67

To this amount, $1,607,675.67, representing the actual appraisal and cost of the property as shown by the books, we have added $120,000.00 being an estimate of the cost of a holder acquired in or about the year 1906, but not on the books. This would give the adjusted appraisal and cost value at $1,727,675.67, the amount shown on page 20. Stated in a somewhat different form the appreciation of $2,126,299.55 is determined as follows:

Appreciation on transfer, etc.....		$2,510,408.33
Deduct:		
Depreciation charged by Company..	$264,108.78	
Value allowed for Holder not on Books.....	120,000.00	
		384,108.78
Appreciation excluded from Accounts.....		$2,126,299.55

We might explain that there is no record on either the books of the Capital City or Des Moines Companies of this holder erected about 1906, for which we have allowed a cost of $120,000.00. The books of the latter company are quite clear as to the price paid for the properties and other assets acquired, viz: $3,334,000.00, consisting of the following securities:

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1791 *Securities*—Continued.

	Par value.
22,490 Shares Capital Stock	$2,249,000.00
First Mortgage 5% Bonds	285,000.00
Preferred Stock Contracts	800,000.00
Total	$3,334,000.00

Of this amount, $45,000.00 in bonds was paid for the Valley Junction property, the remainder of the bonds and the whole of the capital stock and preferred stock contracts being paid to the Capital City Gas Light Company. The books of the Capital City Gas Light Company are equally clear as to the disposition of these securities received in consideration of the assets transferred. Of the bonds thus acquired, $120,000.00 was paid in settlement of a debt of $105,526.49 payable to the United Gas Improvement Company. The remainder of the consideration, having a par value of $3,169,000.00 was, according to a journal entry on the books of the Capital City Gas Light Company, disposed of thus: "Dividend in liquidation distributed pro rata to the shareholders of this Company in the securities of the Des Moines Gas Company, that is, 22,490 shares of capital stock, $120,000.00 First Mortgage Gold Bonds, $800,000.00 Preferred Stock Contracts, as authorized by the Board of Directors at meeting held February 28, 1906 at 3.00 o'clock p. m."

From this entry we feel we might very reasonably assume that before making this distribution all obligations were settled. It has, however, been stated that the holder referred to had been contracted for. As it appears in neither set of books we assume the obligation was, in some way, adjusted by the Capital City Company shareholders. We have repeatedly requested the Company's officials to furnish us with information on this point, but so far we have
1792 not received it. In order that no injustice may be done to the Company we have added $120,000.00 to the cost of the property; that, we understand, may be regarded as approximately its cost.

We might also refer to the appreciation of $131,744.44 included in plant account as of date May 1, 1897. On that date this amount was charged, being credited to profit and loss account to bring the investment accounts of the Company covering its property, real and personal, including its right, franchises, privileges, contracts and immunities to an amount equal to $600,000.00 in excess of its indebtedness, that amount being estimated as a fair valuation on December 31, 1896. This wording is substantially that used in the records.

The depreciation charged off by the Company on June 30, 1909, $264,108.78, does not appear to have been calculated upon any basis. It was the amount then at the credit of profit and loss account and represented the net income of the Company from March 1, 1906 to June 30, 1909, after discharging all obligations in respect of expenses, including interest on bonded and floating indebtedness.

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Investment in Working Capital.—We have accorded consideration to the working capital employed in the business and ascertained that at December 31, 1910 it amounted to $68,952.91, made up as follows:

Current and Working Assets:	
Materials and Supplies	$77,410.46
Accounts Receivable	51,858.54
Cash in Bank and on Hand	49,434.15
Insurance paid in Advance	905.20
Total Current and Working Assets—Forward.	$179,608.35

1793 *Investment in Working Capital*—Continued.

Total Current and Working Assets—Forward.		$179,608.35
Liabilities:		
Bills and Accounts Payable	$51,838.37	
Accrued Taxes and Interest	58,817.07	
		110,655.44
Excess of Current Assets over Current Liabilities		$68,952.91

We believe the suggestion has been made that accrued taxes and interest should not be deducted in determining the amount of working capital, but we might point out that because of their non-payment the cash on hand is correspondingly increased. There is a period during the year when this liability does not appear on the balance sheet, and at that time the cash is correspondingly reduced. As a matter of fact, the cash balances are accumulated to provide for the payment of these obligations. The bill payable included above is for $14,000.00 and is payable on demand. It would therefore seem to be a legitimate deduction in determining the working capital. The foregoing figures are taken from the Company's balance sheet of December 31, 1910.

The question of this working capital should be considered from the standpoint of the amount required to operate the business. Looked at from this viewpoint we believe the amount sufficient for the needs of the business.

General.

To the following matters more or less directly connected with the case now under consideration, we desire to direct your attention:

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1794 *Balance Sheet.*

The following is a condensed comparative balance sheet as set December 31, 1910, and March 1, 1906, greater detail being presented in Exhibit "F", as taken from the books:

	Dec. 31, 1910.	March 1, 1906.	Increase. *Decrease.
Assets:			
Fixed Assets, before charging Depreciation	$4,118,084.00	3,592,723.24	525,360.76
Current and Working Assets	178,703.15	179,527.03	*823.88
Charges deferred to Future Operations	905.20	993.38	*88.18
Total	$4,297,692.35	3,773,243.65	524,448.70
Liabilities:			
Capital Stock	$2,250,000.00	2,249,000.00	1,000.00
Preferred Stock Contracts	411,000.00	800,000.00	*389,000.00
First Mortgage Gold Bonds—5%	1,097,000.00	685,000.00	412,000.00
Total Fixed Liabilities	3,758,000.00	3,734,000.00	24,000.00
Current	51,838.37	18,227.80	33,610.57
Accrued	58,817.07	21,015.85	37,801.22
Surplus, before charging Depreciation	429,036.91	.....	429,036.91
Total	$4,297,692.35	3,773,243.65	524,448.70

[* In red ink in copy.]

The current and working assets at December 31, 1910 include inventories aggregating $77,410.46, as follows:

Purification Stock	$4,113.30
Tar	1,235.34
Store room	36,218.12
Stable	5,805.40
Gas	811.44
Boiler Fuel	737.95
Generator Fuel	10,449.98
Carried Forward	$59,371.53

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1795 *Current and Working Assets*—Continued.

Brought Forward	$59,371.53
Oil, Water Gas, Stock	9,301.80
Gas Coal	1,222.16
Store room Suspense—1908	3,214.77
Store room Suspense—1910	819.00
Gas Arc Lamps	3,481.20
Total	$77,410.46

The surplus account, having a credit balance of $429,036.91, represents substantially the accumulated income of the period of four years and ten months from March 1, 1906 to December 31, 1910, determined as follows:

Year to February 28, 1907	$49,454.76
Year to February 29, 1908	77,739.26
Year to February 28, 1909	107,017.04
Ten Months to December 31, 1909	87,305.06
Year to December 31, 1910	112,168.60
Total Income	433,684.72
Taxes omitted by Company, charged by us	1,287.37
Replacement values expenses, charged by Company, eliminated from above	*5,935.18
Surplus as shown by Company	$429,036.91

[* In red ink in copy.]

Operations from January 1, 1895, *to December* 31, 1910.

The following summary presents our estimated investment in plant and property at the close of each year during this period. To the actual investment in physical properties we have added an arbitrary $50,000.00 for working capital, except at December 31, 1910, when we have added the amount determined in this report.

1796 We also present the revenue and operating expenses as shown by the books, except as adjusted by us during the last five years, including as an expense our allowance to provide for depreciation. We further state the ratio the net revenue, thus ascertained, bears to the investment, as now determined:

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Year to:	Estimated investment less depreciation.	Net revenue.	% to investment.	Total revenue.	Operating expenses, incl. depreciation.
December 31, 1895	$484,664.	36,351.	7.50	95,414.	59,063.
" 1896	522,275.	25,573.	4.90	99,921.	74,348.
" 1897	578,788.	31,273.	5.40	109,901.	78,628.
" 1898	603,731.	35,772.	5.93	118,117.	82,345.
" 1899	643,109.	30,682.	4.77	138,521.	107,839
" 1900	668,917.	48,177.	7.20	173,158.	124,981.
" 1901	770,032.	54,176.	7.04	197,623.	143,447.
" 1902	813,265.	61,621.	7.57	242,610	180,989.
" 1903	885,081.	74,282.	8.39	289,486.	215,204.
" 1904	913,468.	114,260.	12.51	337,205.	222,945.
" 1905	1,008,972.	127,527.	12.64	369,375.	241,848.
Two Months to: February 28, 1906	1,016,304.	15,973.	9.43	59,159.	43,186.
Year to: February 28, 1907	1,291,885.	115,281.	8.92	390,833.	275,552.
" 29, 1908	1,359,088.	139,449.	10.26	446,510.	307,061.
" 28, 1909	1,372,948.	165,442.	12.05	471,734.	306,292.
Ten Months to: December 31, 1909	1,442,812.	130,661.	10.87	409,240.	278,579.
Year to: December 31, 1910	1,550,767.	160,189.	10.33	538,893.	378,704.
Total		1,366,689.	.....	4,487,700.	3,121,011.
Average	$893,603.	85,418.	9.56		

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In compiling this statement we have assumed that additions to plant were earning during the entire year, instead of on the basis of one half of a year.

As an indication of the reduction in the percentage earned through the adoption of the foregoing method of deducting depreciation from the investment and per contra, adding it to the operating expenses we might explain that, were we to adopt the Company's own net revenue, which ignores depreciation, the return upon the in-
1797 vestment, also stated before deducting depreciation, would be 11.12% for the calendar year 1910.

Surplus Income—July 1, 1886, *to February* 28, 1906.

The United Gas Improvement Company acquired control of the Capital City Gas Light Company on July 1, 1886 and operated it under that name until February 28, 1906, when it was reorganized as the Des Moines Gas Company. During this period the operations of the Company as recorded by its books resulted in a net income, available for stockholders, after payment of all interest charges of $640,709.16. This amount was divisible between the periods July 1, 1886 to December 31, 1896, and January 1, 1897 to February 28, 1906, in the proportions of $181,005.56 and $459,703.60 respectively. At December 31, 1896 the first named amount was disposed of as follows:

Net Income, available for Dividends	$181,005.56
Dividend of 4¼% declared on April 3, 1888	12,750.00
Undivided Income at December 31, 1896	168,255.56
Appreciation of Properties to an amount $300,000.00 in excess of Outstanding Capital of same amount	131,744.44
Amount issued as Stock Dividend	$300,000.00

The accumulated profits from January 1, 1897 to February 28, 1906 amounting to $459,703.60 were at the credit of surplus account when the transfer was made, having been utilized in the development of the business.

The total income, before charging depreciation, but after meeting all interest charges, from July 1, 1886 to December 31, 1910, may be summarized as follows:

1798 *Total Income*—Continued.

July 1, 1886 to Dec. 31, 1896	$181,005.56
Jan. 1, 1897 to Feb. 28, 1906	459,703.60
Mar. 1, 1906 to Dec. 31, 1910	433,684.72
Total	**$1,074,393.88**

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Accident Claims.

During our examination of these accounts we several times enquired if any accident claims were pending against the Company at December 31, 1910. Only after the completion of our report were we advised of the following claims pending. We quote from the Company's statement as follows:

"Frank Getchell:	
Killed when automobile struck service cart November 22, 1907, suing for	$100,000.00
"O. R. Nattinger:	
Killed in above accident, suing for	20,000.00
"Isle Denny:	
Injury in above accident, suing for	1,000.00
"Nattinger Automobile Co.:	
Suing for damages to automobile involved in the above mentioned case	500.00
"Thomas Travis:	
Skull fractured and otherwise badly injured March 2, 1910, suing for	30,000.00

"In addition to the above mentioned cases there are several small outstanding claims for from $25.00 to $100.00."

We understand the company repudiates liability in respect of these accidents, but we would suggest that consideration might be accorded to the probable loss, if any such can be established.

1799 Data relative to the unit costs of supplies, mains, services and meters installed, etc. is presented in schedules attached hereto.

In justice to the Company we desire to state that every facility was afforded us in the conduct of this examination, and that we found the books and records to have been well kept.

Yours truly,

MARWICK, MITCHELL & CO.,
Chartered Accountants.

(Here follows diagram marked p. 1800.)

(Here follow pasters, marked pages 1801-1818.)

SCHEDULE "3."

Summary of Extensions and Improvements at Works.

1. Period from Jan. 1, 1895, to Feb. 28, 1906:

1895, Mar. 31.	Purifiers—Balance Contract		$422.00
1895, Apr. 30.	New Coke Wagon		53.75
1895, Aug. 31.	Display Room Apparatus		164.47
1895, Dec. 31.	New Water Pump		186.23
1895, Dec. 31.	Sundries		11.88
			838.33
	Less: Tools		100.00
	Total 1895		738.33
1896, May 31.	Display Window	$31.00	
1896, May 31.	Fire Protection	52.80	
1896, July 31.	New Buggy	150.00	
1896, Sept. 30.	Hose	50.00	
1896, Sept. 30.	Office Furniture	25.00	
1896, Oct. 31.	Ventilating Fan	27.00	
1896, Oct. 31.	New Tank Scales	1,070.57	
1896, Dec. 31.	New Coal Shed	3,688.30	
1896, Dec. 31.	Averaging Tank	115.16	
1896, Dec. 31.	Setting up 16" Generator	429.88	
1896, Dec. 31.	Changing Water Gas Apparatus	652.22	
	Total 1896		6,291.93

1897, Feb. 28. Office Furniture	25.00	
1897, Mar. 31. Welsbach Store Room	30.44	
1897, May 31. New Gutters	82.00	
1897, May 31. Bristol Gauge	35.80	
1897, July 31. Coupon Cutter	60.00	
1897, July 31. Filing Case	25.00	
1897, July 31. Office Changes	20.75	
1897, July 31. Bristol Gauges	44.40	
1897, Aug. 31. Oil Storage Tank	2,023.80	
1897, Oct. 31. Elevator	443.21	
1897, Oct. 31. Addressograph	197.66	
1897, Dec. 31. Tar Separator	259.72	
1897, Dec. 31. Pump	119.06	
1897, Dec. 31. Tools	51.60	
Total 1897		3,418.44
1898, Apr. 30. Office Furniture	475.86	
1898, Apr. 30. Horse and Wagon	217.00	
1898, May 31. Exhaust and Connection	2,411.52	
1898, June 30. Office Safe	100.00	
1898, Dec. 31. Lathe and Tools	208.32	
Total 1898		3,412.70
Carried Forward		$13,861.40

1820		Brought Forward		$13,861.40
1899, May 31.		Cashier's Cage	$115.00	
1899, May 31.		New Desk	28.00	
1899, June 30.		Store Room	50.00	
1899, June 30.		Lockers	56.10	
1899, Dec. 31.		Store Room	175.00	
1899, Dec. 31.		New Boilers	5,731.41	
1899, Dec. 31.		Water Tank	200.00	
1899, Dec. 31.		New Exhauster	1,820.29	
1899, Dec. 31.		Gauges	87.90	
1899, Dec. 31.		Water Pump	276.05	
1899, Dec. 31.		Oxygen Pump	51.78	
1899, Dec. 31.		Gauges	68.25	
1899, Dec. 31.		Tools	71.12	
			8,730.90	
	Less:	New Boilers, Water Tank, Water Pump sold	$260.00	
		Governor	175.00	
		Sundries	90.00	
			525.00	
		Total 1899		8,205.90
1900, Feb. 28.		New Exhauster	221.06	
1900, Apr. 30.		Desk	64.00	
1900, Apr. 30.		Adding Machine	250.00	
1900, Apr. 30.		Store Room	54.26	
1900, Nov. 30.		Fire Protection	95.85	
1900, Nov. 30.		Wet Meter	18.00	

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1900, Nov. 30. Tools		91.03	
1900, Nov. 30. Sundries		92.20	
	Total 1900		886.40
1901, Sept. 30. Fan		58.50	
1901, Sept. 30. Cabinet		113.00	
1901, Sept. 30. Coupon Cutter		57.00	
1901, Sept. 30. Pentane Lamp		90.00	
1901, Sept. 30. Hydrogen Apparatus		22.25	
1901, Sept. 30. Addressograph		118.82	
1901, Nov. 30. Mason Regulator		73.86	
1901, Dec. 31. Barrows		599.58	
1901, Dec. 31. Awnings		55.85	
1901, Dec. 31. New Store Room		977.94	
1901, Dec. 31. Countershaft		69.88	
1901, Dec. 31. New Water Gas Apparatus		34,405.49	
	Carried Forward	$36,642.17	22,953.70
1821	Brought Forward		$22,953.70
1901, Continued:			
	Brought Forward	$36,642.17	
1901, Dec. 31. Blowers		119.52	
1901, Dec. 31. Weighing Scales		123.48	
1901, Dec. 31. Pipe Machine		83.77	
1901, Dec. 31. Tools		34.21	
	Total 1901		37,003.15

1902, June 30.	Horse	153.76	
1902, Aug. 31.	Stable	158.38	
1902, Aug. 31.	Horse and Wagon	614.50	
1902, Dec. 31.	Shop A	944.83	
1902, Dec. 31.	Gauges	41.89	
1902, Dec. 31.	Photometer	199.71	
1902, Dec. 31.	Coating Apparatus	31.01	
1902, Dec. 31.	Paving and Concreting	1,297.44	
1902, Dec. 31.	Engine Shop	25.00	
1902, Dec. 31.	Wagon	75.00	
1902, Dec. 31.	Fire Protection Apparatus	39.60	
1902, Dec. 31.	Stable	352.15	
1902, Dec. 31.	Tools	137.46	
1902, Dec. 31.	Office Furniture	344.20	
		4,414.93	
	Sundry Sales	386.49	
	Total 1902		4,028.44
1903, June 30.	Horse	150.00	
1903, Dec. 31.	Oil Filter	25.07	
1903, Dec. 31.	Oxide Pan	66.79	
1903, Dec. 31.	Coke Bins	310.56	
1903, Dec. 31.	Fire Hose	157.90	
1903, Dec. 31.	Changing Blast Connection	30.20	
1903, Dec. 31.	Oxide Floor	226.99	
1903, Dec. 31.	Furniture	40.85	
1903, Dec. 31.	Tools	375.12	
		1,383.48	

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Less: Transferred to Stable	$2,143.00		
Repairs, Stable, etc	462.15		
		2,605.15	
Total 1903			*1,221.67
Carried Forward			$62,763.62

[* In red ink in copy.]

1822	Brought Forward		$62,763.62
1904, Jan. 31.	Oil Pump House	$71.09	
1904, Mar. 31.	Typewriter	164.50	
1904, July 31.	Filing Cabinet	55.85	
1904, July 31.	Water Main	306.48	
1904, July 31.	Engine Stop	62.91	
1904, Dec. 31.	New Fence	117.45	
1904, Dec. 31.	Washbox Valves	421.18	
1904, Dec. 31.	Feed Water Heater	150.00	
1904, Dec. 31.	Pipe Covering	103.75	
1904, Dec. 31.	Changing Connections	400.00	
	Total 1904		1,853.21
1905, Sept. 30.	Station Meter Drums	600.00	
1905, Nov. 30.	Holder Heating Syphons	83.70	
1905, Nov. 30.	Fence	752.48	
1905, Nov. 30.	Station Meter Drums	87.96	
1905, Nov. 30.	Bristol Gauge	59.91	

CLOSE IN CENTER

1905, Nov. 30. Holder Scale		14.49	
1905, Dec. 31. Generator Fire Doors		100.00	
1905, Dec. 31. Deepening Purifiers		6,876.97	
Total 1905			8,575.51
1906, Feb. 28. Deepening Purifiers		89.62	
1906, Feb. 28. Pump and Pump House		46.71	
1906, Feb. 28. Pusher Plant		45.85	
1906, Feb. 28. Oxide Floor		195.23	
1906, Feb. 28. P. & A. Condenser		1,651.09	
Total Two Months			2,028.50
Total to Feb. 28, 1906			$75,220.84

1823

2. Period from March 1, 1906, to December 31, 1910:	Year ended. Feb. 28, 1907.	Feb. 29 1908.	Feb. 28, 1909.	10 mos. ended Dec. 31, 1909.	Year ended Dec. 31, 1910.	
Oxide Floor	$11.20	.....	.....	.....	.....	
Storeroom—Valley Junction	217.49	.....	.....	.....	.....	
Cement Sidewalk—Valley Junction	58.50	.....	.....	.....	.....	
Fence	271.17	.....	.....	.....	.....	
Changes to Storeroom	29.16	.....	.....	.....	96.99	
Tar Separator and Pump House	562.38	97.39	.....	.....	.....	
Metallic Hose	167.10	.....	.....	.....	.....	
P. & A. Condenser	7.45	78.37	.....	.....	.....	
Pumps	200.00	.....	.....	.....	.....	129.80

COPY BOUND C

Pusher Plant	3,096.62	.....	.....	.....	.....	
Boiler Feed Pump	322.71	.....	.....	.....	.....	
Housing Holder Tank	.....	2,696.64	.....	.....	.....	
Oil Tank	.....	8,402.40	.....	28.80	7,822.39	
Water Gas Set	.....	69.36	.....	.....	.....	
Livesay Seal	.....	467.82	.....	433.89	.....	
Deep Well	.....	622.44	.....	.....	.....	
Alteration for Unloading Coal	.....	500.00	.....	.....	.....	
Water Service	.....	711.04	281.19	.....	.....	
Boilers	.....	2,119.64	245.38	.....	.....	
Hygrometer and Coils	.....	93.90	15.00	50.00	.....	
Photometer Standard	.....	.....	63.64	.....	.....	
Fire Line	.....	.....	112.56	.....	.....	
Air and Steam Meters	.....	.....	566.72	.....	.....	
Back Pressure Valves	.....	.....	198.32	.....	.....	
Butterfly Valves	.....	.....	298.48	.....	.....	
New Condenser, etc.	.....	.....	.....	2,618.00	4.15	
Governor, etc.	.....	.....	.....	130.31	.....	
New Set	.....	.....	.....	24,338.66	4,194.51	
Exhauster	.....	.....	.....	2,156.21	.....	
Station Meter	.....	.....	.....	2,210.13	8,139.01	
Toilet Facilities	.....	.....	.....	126.73	269.48	
Dipping Meter	.....	.....	.....	80.61	.....	
Calorimeter	.....	.....	.....	376.05	.....	
Railing	.....	.....	.....	22.16	.....	
Moving Shop	.....	.....	.....	3,300.00	.....	
Gas Engine	.....	.....	.....	225.00	.....	
New Stacks	.....	.....	.....	350.94	.....	
Photo Cocks	.....	.....	.....	13.70	.....	

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Remodeling W. G. Apparatus					1,219.04
Replacing Stock					124.61
Oil Handling Apparatus					57.25
Carried Forward	$4,943.78	15,859.00	1,781.29	36,461.19	22,057.23
1824 2. Period from March 1, 1906, to December 31, 1910, Continued:					
Brought Forward	$4,943.78	15,859.00	1,781.29	36,461.19	22,057.23
Bristol Gauges					83.25
Coke Shed and Apparatus					3,311.60
Improving River Front					545.71
Draft Regulator					36.95
Feed Water Heater					680.39
	$4,943.78	15,859.00	1,781.29	36,461.19	26,715.13

Total to December 31, 1910, $85,760.39.

COPY BOUND

SCHEDULE "4."

General Statistics.

For the Years 1895 to 1910.

Year.	Population.	Meters.		Mains.		Gas sales.			
		Number in service.	Inhabitants per meter.	Feet.	Per meter.	M C. F.	Per cent increase.	Per meter, M C. F.	Per inhabitant, M C. F.
1895.....	56,500	2,488	22.71	202,529	81.40	61,100	.....	24.56	1.08
1896.....	57,000	2,868	19.88	257,796	89.89	76,437	25.10	26.65	1.34
1897.....	57,800	3,479	16.61	304,514	87.53	83,951	9.83	24.13	1.45
1898.....	59,000	4,127	14.30	340,616	82.53	93,613	11.51	22.68	1.59
1899.....	60,500	5,308	11.40	360,518	67.92	109,821	17.31	20.69	1.82
1900.....	62,100	6,425	9.67	381,983	59.45	141,931	29.24	22.09	2.29
1901.....	64,500	7,682	8.40	430,398	56.03	160,990	13.43	20.96	2.50
1902.....	67,200	8,898	7.55	468,606	52.66	206,765	28.43	23.24	3.08
1903.....	70,000	10,395	6.73	522,259	50.24	244,245	18.12	23.50	3.49
1904.....	72,900	11,436	6.37	551,202	48.20	292,407	19.72	25.57	4.01
1905.....	75,600	12,940	5.84	640,442	49.49	334,405	14.36	25.84	4.42
1906.....	78,000	14,640	5.33	778,893	53.20	372,102	11.27	25.42	4.77
1907.....	80,200	16,073	4.99	823,180	51.21	429,519	15.43	26.72	5.36
1908.....	82,300	17,100	4.81	858,665	50.21	461,178	7.37	26.97	5.60
1909.....	84,400	18,439	4.58	907,640	49.22	497,245	7.82	26.97	5.89
1910.....	88,900	19,736	4.50	1,005,734	50.96	531,991	6.99	26.96	5.98

CLOSE IN CENTER

SCHEDULE "5."

Summary of Additions to Mains, Services, Meters, and Street Lamps

From January 1, 1895, to December 31, 1910.

Period.	Mains.	Services.	Meters.	Street lamps.
For the year ended:				
December 31, 1895	$3,819.39	2,364.04	1,907.67	73.72
" 1896	23,139.46	6,878.75	3,633.28	2,253.99
" 1897	20,124.25	6,901.35	5,008.82	1,097.51
" 1898	12,967.43	7,715.55	5,705.91	757.70
" 1899	13,917.29	10,897.10	12,762.77	184.45
" 1900	7,934.00	16,944.01	8,244.95	313.91
" 1901	38,824.34	23,339.32	9,917.55	1,190.81
" 1902	24,973.12	17,842.59	8,266.88	702.11
" 1903	48,563.78	21,923.57	17,205.25	35.91
" 1904	23,998.35	14,913.00	5,221.91	*54.43
" 1905	65,473.12	19,306.48	20,530.80	1,805.52
Two Months to:				
February 28, 1906	2,817.72	1,770.31	4,136.04	88.71
†Total to February 28, 1906	†286,552.25	†150,796.07	†102,541.83	†8,449.91
For the year ended:				
February 28, 1907	87,672.28	14,738.11	24,972.51	1,587.60
" 29, 1908	52,716.86	12,537.90	12,457.74	144.31
" 28, 1909	21,273.23	12,636.45	5,858.42	268.61

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For the ten months ended:				
December 31, 1909	30,816.97	14,001.87	12,361.21	39.13
For the year ended:				
December 31, 1910	50,206.78	18,578.95	12,715.05	.....
*Total to December 31, 1910	†242,686.12	†72,493.28	†68,364.93	†2,039.65
Total	$529,238.37	223,289.35	170,906.76	10,489.56

The mains laid during the period from March 1, 1906, to December 31, 1910, as per the books, are as follows:

Size of main.	Total feet laid.	Total cost.	Average cost.
*3″ and under	30,996	$702.67	.0227
4″	208,121	94,291.33	.4531
6″	59,933	44,585.89	.7439
8″	20,613	21,512.62	1.0436
Carried Forward	319,663	$161,092.51	

* In red ink in copy.
† In green ink in copy.

SCHEDULE "5"—*Continued.*

Summary of Additions to Mains, Services, Meters and Street Lamps—Continued.

Mains Laid and Cost—Continued.

Size of main.	Total feet laid.	Total cost.	Average cost.
Brought Forward	319,663	$161,092.51	
10"	7,114	9,554.97	1.3431
12"	10,610	12,801.68	1.2065
16"	7,020	14,966.22	2.1319
20"	6,036	19,253.89	3.1898
24"	1,819	17,048.96	9.3727
Total	352,262	234,718.23	
Improvements		7,967.89	
Total as Above			$242,686.12

* This account obviously is in error and we are of opinion has been confused with services.

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Meters in Service.

	Total.	In stock.	Nominally in service.	Turned off.	In actual service.
As at December 31:					
1894	2,362	137	2,225	...	.....
1895	2,644	156	2,488	...	.....
1896	3,192	324	2,868	...	.....
1897	3,870	391	3,479	...	.....
1898	4,517	390	4,120	...	.....
1899	5,760	452	5,308	...	.....
1900	6,732	307	6,425	...	.....
1901	8,082	400	7,682	...	.....
1902	9,165	267	8,898	...	.....
1903	11,190	795	10,395	...	.....
1904	11,919	483	11,436	...	.....
1905	14,220	585	13,635	695	12,940

Carried Forward.

1828

SCHEDULE "5"—*Continued.*

Meters in Service—Continued.

	Total	In stock.	Nominally in service.	Turned off.	In actual service.
February 28, 1906	14,640	1,076	13,564	520	13,044
February 28, 1907	16,285	1,194	15,091	520	14,571
February 29, 1908	17,847	1,157	16,690	617	16,073
February 28, 1909	19,032	1,687	17,345	583	16,762
December 31, 1909	20,110	1,210	18,900	461	18,439
December 31, 1910	21,415	987	20,428	692	19,736

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Sizes of Meters Purchased Less Condemned.

Light.		Number.	Last invoice price, excl. freight.	
3	Standard	28	$5.00	
5	"	7,782	5.85	
10	"	1,231	8.55	
20	"	42	10.25	
30	"	42	16.10	
45	"	27	20.40	
60	"	2	46.50	
5	Prepay	9,774	9.30	Without locks or attachments.
10	"	125	11.65	" " " "
		19,053		
Details of December 31, 1894, Meters unknown..		2,362		
Total		21,415		

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SCHEDULE "6."

Data Relative to Standard Prices Paid by Company.

Invoice. Date.	Number.		
		Fuel, etc.:	
Nov. 3, 1910	4054	Steam Coal per ton delivered	$1.55
		Mine Run Coal per ton delivered	2.50
		Oven Coke $4.00 per ton, Freight $1.85	5.85
Nov. 26, 1910	4056	Petroleum Gas Oil (Standard Oil Co.) F.O.B. Des Moines—per 100 gals	2.80
		Wrought Iron Pipe:	
Aug. 5, 1910	2879	1/4" F. O. B. Des Moines—per foot	.0163
" 5, 1910	2879	3/8" " " "	.0157
" 5, 1910	2879	1/2" " " "	.022
" 5, 1910	2879	3/4" " " "	.0254
		Galvanized Iron Pipe:	
Aug. 5, 1910	2879	1/2" F. O. B. Des Moines—per foot	.0314
" 5, 1910	2879	3/4" " " "	.035
" 5, 1910	2879	1" " " "	.049
		Cast Iron Pipe:	
Aug. 31, 1910		4" F. O. B. Des Moines—per foot	.27
Nov., 1907		6" " " "	.48
Sept. 1, 1910		8" " " "	.54
Apr. 23, 1910		10" " " "	.79
Nov. 16, 1910		12" " " "	.84
Nov. 23, 1910		16" " " "	1.10
Oct., 1907		24" " " "	3.68

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Oil Contract—Dated June 1, 1909:

Standard Oil Co. of New York contracts to sell to Des Moines Gas Company 7,590,000 gals. of Gas Oil (this quantity expected to cover three years' supply) at the rate of $.028 per gal. delivered in tank cars at Des Moines, Iowa.

Coke Contract—Duration of Contract June 1, 1911, to June 1, 1912:

The Milwaukee Coke & Gas Co. by Pickands, Brown & Co., Agents, agree to sell to Des Moines Gas Company 9,500 tons, 10% more or less, of Milwaukee Solvay Run-of-Oven Coke at the rate of $4.00 per ton—F. O. B. cars Milwaukee. (Freight $1.85 per ton.)

1830

SCHEDULE "7."

Office Salaries and Pay-Roll Labor.

December, 1910.

Invoice. Date.	Invoice. Number.	Office Salaries—Rate per Month:	
Dec. 24, 1910	4367	Manager	$625.00
		Engineer	266.66
		Assistant Secretary & Treasurer	191.66
		Chief Clerk	150.00
		1 Cashier	112.50
		1 Assistant Cashier	60.00
		1 General Bookkeeper	100.00
		1 New Business Agent	200.00
		7 Ledger Clerks	570.00
		2 Stenographers	160.00
		1 Demonstrator	100.00
		16 Clerks	783.33

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		7 Solicitors	530.00
		5 Collectors	265.00
		2 Cadet Engineers	185.00
			$4,299.15
		Pay-roll Labor:	
Dec. 15, 1910	4357	Foreman— Per Month	$100.00
		Night Foreman— "	85.00
		Works Clerk— "	65.00
		Engineers (Boiler)—Per Day	2.75
		Gas Makers— "	2.75
		Firemen— "	2.40
		Shop Foreman—Per Month	85.00
		Store Clerks— "	75.00
		Ordermen— Per Day	2.375
		Meter Reader— "	2.00
		Laborer— "	2.00
		Service Foreman— "	2.375
		Inspector— "	2.75

326—397
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1831 DEFENDANTS' EXHIBIT #31.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

9/12/11.

Des Moines Gas Company.

Rate Litigation Expenses 1909 *and* 1910.

Abstract.

1909. Replacement Value:

Service Investigation	Page	1	$162.
Distribution Office Expense	"	4	170.
			333.

1910. Rate Litigation Expense:

Special Litigation	Page	1	82.
Replacement Values	Pages	1-3	4,445.
Office Special	Page	4	513.
Expense General	"	4	561.
			5,602.
Total			$5,935.

Details.

Special Litigation:

1910, Dec. 29.	J. Haines Expenses to Council Bluffs with Carr & Read		53.
" 31.	Frank B. Clark U. S. Marshall Costs "7 Subpœna in Chancery 7 Restraining Orders Chancery"		28.
			82.

Service Investigation:

1909, Mar. 15.	Pay-roll—Time on records of services	61.
" 31.	Petty Cash—Car Tickets, etc	24.
" 31.	Pay-roll—Time on records of services	72.
May 31.	Stores Expense	4.
		162.

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Replacement Values:

1910, May 31.	United Gas Improvement Company—April time of W. F. Downs.....			6.00
July 31.	United Gas Improvement Company—June time of W. F. Broadnax.....			9.00
Nov. 12.	Yankee Furniture Store—Flat Top Desk.....		$8.00	
	Carried Forward.....		$8.00	15.00

1832 *Rate Litigation Expenses*—Continued.

Replacement Values, continued:

Brought Forward.....			$8.00	15.00
1910, Nov. 15.	Pay-roll—Labor (Services).		14.00	
" 22.	Langan Bros.—1 Doz. Counter Books.....		2.00	
" 18.	Chas. Weitz' Sons—Fee for estimate of construction of buildings.....		20.00	
" 30.	Baker Trisler Co.—Supplies for W. Broadnax.....		25.00	
" 9.	Elliott Anderson—6 chairs.		4.50	
" 8.	Rees Gabriell Co.—Lumber		2.50	
" 30.	Pay-roll—Labor.....		20.17	
" 30.	Petty Cash.....		26.61	
" 30.				123.93
	United Gas Improvement Company:			
	1 24 Yard roll Tracing Cloth		8.10	
	November time of E. L. Heyse		73.33	
				81.43
Dec. 1.	Iowa Telephone Company—Service		5.00	
" 1.	Excess Baggage Checks....		4.25	
" 15.	Pay-roll—Labor		116.31	
" 31.	Baker Trisler Co.—Supplies for W. Broadnax.....		8.70	
" 31.	W. H. Brereton, Contractor—services rendered W. Broadnax		20.00	
" 31.	Rees Gabriell Co.—Lumber.		1.30	
" 31.	Iowa Publishing Co.—Blue Prints		18.25	
" 31.	J. C. Mardis Co.—Services making itemized list of cost data.....		20.00	

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"	31.	Perkins Electrical Co.—Flash Lights	14.25	
"	31.	Woods & Wilson—159 Negatives—10 prints	112.10	
"	31.	Petty Cash	9.50	
"	31.	Pay-roll—Labor	309.38	
"	31.	Baker Trisler Co.—supplies for W. Broadnax	3.65	
"	31.	Des Moines Capital—Advertising	.48	
"	31.	Bankers Cabinet Supply Co. M Service cards punched.	27.65	
"	31.	Rees Gabriell & Co.—Lumber	1.55	
"	31.	Perkins Electrical Co.—Lamps and Batteries	4.50	
"	31.	United Gas Improvement Company:		676
		November expense of J. B. Klumpp	143.40	
		November time and expense of W. F. Broadnax	217.00	
Carried Forward			$360.40	897

1833 *Rate Litigation Expenses*—Continued.

Replacement Values, continued:

Brought Forward 897

1910, Dec. 31.	United Gas Improvement Company, continued:		
	Brought Forward	$360.40	
	November Expense of G. M. Harrison	116.05	
	November time of G. M. Harrison	55.00	
	November time and expense of W. Sturdevant	103.65	
	November time and expense of E. S. Umstead	128.86	
	November time and expense of E. L. Heyser	102.85	
	November time of S. G. Elliott	60.00	
	November expense of S. G. Elliott	98.87	
	November time and expense of E. P. Walter	144.40	

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	November Expense of C. S. Chrisman	.25	
	November expense of H. L. Hodge	104.19	
	November time and expense of W. F. Downs	154.10	
			1,428.62
1910, Dec. 31.	United Gas Improvement Company:		
	December time and expense of W. F. Downs	201.41	
	November time of H. L. Hodge	62.50	
	December time and expense of H. L. Hodge	152.66	
	December time and expense of S. G. Elliott	184.73	
	December time and expense of G. M. Harrison	212.85	
	December time and expense of W. F. Broadnax	233.83	
	December time and expense of W. E. Obeele, Draftsman	7.74	
			1,055.72
1910, Dec. 31.	United Gas Improvement Company:		
	December expenses of J. B. Klumpp		199.70
			3,581.27
	United Gas Improvement Company:		
	Expressage on Boxes	50.55	
	December time and expense—E. L. Heyser	218.84	
	December time and expense—E. P. Walter	214.40	
	December time and expense—E. S. Umstead	230.66	
	December time and expense—W. Sturdevant	179.84	
			864.29
			4,445.56
	Less:		
	Expense Stable		.50
			$4,445.06

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1834–1844 *Rate Litigation Expenses*—Continued.

Office Special:

1910, Nov.	15.	Pay-roll "Special Work"	$194.00
"	30.	Pay-roll "Special Work"	24.00
Dec.	1.	500 Ruled Sheets	3.25
"	31.	United Gas Improvement Company:	
		November time and expense of C. J. B. Dixon	42.50
		November time and expense of C. S. Jackson	249.67
			513.50

Expense General:

1910, Dec.	31.	November expenses as follows, account of trips to Chicago in re matter of rates:	
		W. H. Marshall	73.00
		W. F. Douthirt	210.00
		G. W. Curran	30.00
Nov.	1.	Expense of Jansen Haines to Chicago	34.30
"	7.	"	32.25
"	19.	"	56.50
"	29.	" Milwaukee	51.25
Dec.	22.	" Chicago	73.50
			561.30

Distribution Office Expense:

Oct.	31.	Time and expense of L. C. Heamer, March and April	$170.25

1845 DEFENDANT'S EX. 38.

J. P. B.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

Capital City Gas Light Company of Des Moines, Iowa.

Cash Invested in Construction and Working Capital, Dec. 31", 189

Tank & Holder No. 1	$15,000.
Tank & Holder No. 2	33,356.64
Old Gas Works	25,000.00
Real Estate	8,916.
Office Furniture	358.07
Gas Blds. and Machinery	91,123.50
Meters	16,849.17
Street Mains	120,512.29

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Services	35,504.82	
Street Lamp Extension	14,845.87	
Tank and Holder No. 3	40,057.41	
Water Gas Plant	27,903.06	
Inventory of Materials & Supplies	11,559.49	
Working Capital Consisting of Unpaid Gas & other bills and cash	25,546.61	
Total		$466,532.93

STATE OF IOWA,
Polk County, ss:

I, Edward G. Pratt, being duly sworn upon oath state that I am Manager of the Capital City Gas Light Company and that the foregoing statement is correct and true to the best of my knowledge and belief.

UNITED STATES OF AMERICA,
Southern District of Iowa, ss:

I, Wm. C. McArthur, Clerk of the Circuit Court, of the United States for the Southern District of Iowa, hereby certify *to* the above and foregoing to be a full, true and complete copy of a statement contained in a volume of testimony and exhibits in cause No. 2033 Equity in the Circuit Court of the United States, Southern District of Iowa, Central Division, wherein the Capital Gas Light Company was complainant, and the City of Des Moines defendant, said volume of testimony being labeled, "In the Circuit Court of the United States, Southern District of Iowa, Central Division. Capital City Gas Light Company vs. the City of Des Moines. Affidavit of Edward G. Pratt with exhibits. Filed June 14, 1895. Ed. R. Mason, Clerk," as full, true and complete as the original thereof now on file in my office at the City of Des Moines in said district.

In witness whereof I hereunto set my hand and affix the seal of said court this 23rd day of August, A. D. 1911.

[SEAL.]

WM. C. McARTHUR,
Clerk as Aforesaid.

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1846 DEFENDANT'S EX. 39.

J. P. B.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

In the Circuit Court of the United States in and for the Southern District of Iowa, Central Division.

CAPITAL CITY GAS LIGHT COMPANY, Complainant,
vs.
CITY OF DES MOINES, Defendant.

Affidavit of Edward G. Pratt.

UNITED STATES OF AMERICA,
Southern District of Iowa, Polk County, ss:

Edward G. Pratt being first duly sworn, upon his oath says that he is a resident of the City of Des Moines, Iowa, and is now and has been since 1887 the Manager of the Capital City Gas Light Company, having full charge of the operation and conduct of the works and affairs of the Company at Des Moines. That he has been connected with the manufacture and distribution of gas for more than nineteen years. That he is now and has been for many years familiar with the cost of constructing and operating gas works. That his experience and observation embrace both water gas plants and coal gas plants, and he knows the circumstances and conditions under which it is economical and proper to manufacture and distribute a combined gas or mixture of coal and water gas. That he is especially familiar with the gas plant under his charge at Des Moines, Iowa. That a large part of it has been constructed under his own supervision, and during his long connection with the works he has become fully familiar with all its details.

Deponent further says that the transcript hereto attached marked Exhibit "A," is a true and correct copy of the evidence of Lewis Lillie, Walton Clark, W. A. Stedman, Conrad Youngerman, S. A. Robertson, D. B. Lyons, Isaac Brandt, W. A. Munster, Geo.
1847 L. Jarrett, and deponent, taken and offered in a certain suit heretofore brought and determined in the District Court of Iowa, in and for Polk County, wherein the Des Moines National Bank was plaintiff, the Capital City Gas Light Company defendant, and the City of Des Moines intervenor. That said testimony was orally introduced upon an application for a temporary injunction, and the said several witnesses were subjected to a cross-examination by the attorneys of the plaintiff and the intervenor. That the papers hereto attached, marked Exhibit "B," contain a true and correct copy of the pleadings in said last named cause. That upon the said hearing for temporary injunction, which was unusually full and complete, the said District Court held that the ordinance, a

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copy of which is attached to the pleadings, and which was under consideration, was void and of no effect, for the reason that the price of gas fixed therein was unreasonably low, and thereupon denied the application for injunction. That thereafter the City Council of the City of Des Moines passed another ordinance of similar import fixing a net price of $1.35. That said ordinance was brought into the said case by way of an amendment to the petition of intervention filed by the City of Des Moines, and upon the final hearing of said cause the Court adjudged both ordinances invalid, for the reason that they were in conflict with a contract existing between the said City and the Capital City Gas Light Company.

Deponent further says that the contract just mentioned expired on the 9th day of January, 1895. That a short time prior to the expiration of the same the subject arose for discussion in the City Council, and the matter was referred to the proper committee for negotiation with the said Capital City Gas Light Company. That said negotiations proceeded as rapidly as possible, and deponent believes that if the members of the said City Council had been
1848 permitted to exercise their own judgments, the negotiations would have resulted in an agreement respecting the price of gas in the City of Des Moines for some future period. That about the time of the expiration of the said contract certain persons styling themselves as "citizens' " committee began to agitate the subject in Des Moines, and to demand of the City Council that the Gas Company should not be permitted to charge more than $1.00 for gas for illuminating purposes, and a less sum for gas for fuel purposes. That said citizens' committee soon became extremely partisan, and by false statements issued to the people of Des Moines endeavored to create a sentiment against the Company, and the belief that the Company had been charging and desired to charge an extortionate and unlawful price for gas. That the said citizens' committee, by influences which are perfectly well known to a city wherein the members of the Council are elected by the people, so worked upon the committee of the City Council having the matter in charge, and the Council as a whole, that after some months spent in an alleged investigation the citizens' committee reported to the City Council an ordinance, being the ordinance a copy of which is attached to the bill of complaint herein. That there were various meetings held by the City Council, and it was the custom of said citizens' committee to induce large numbers of the people of Des Moines to attend said meetings, for the purpose, as deponent believes, of intimidating the City Council and preventing the exercise of their fair and honest judgment. That on the night upon which the ordinance was passed the said citizens' committee presented to the City Council a petition signed by five or six hundred of the people of Des Moines, which was in substance a command to pass the ordinance so reported by the citizens' committee, although the people who signed said petition do not pretend to know what the price of gas in Des Moines should be; and under such pressure the ordinance, a copy of which is attached to the bill, was passed.

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1849 Deponent further says that the papers hereto attached, marked Exhibit "C", are the exhibits referred to in the testimony of Lewis Lillie, and that they correctly show the matters and things therein embraced. That the part of said papers marked Exhibit "D", are, a continuation of the said several exhibits, (excepting the Profit and Loss statements), from the 31st of December, 1891, to and including the 31st of December, 1894, and bring the history of the Gas Company in the respects shown in said Exhibits up to said last named date. That the said supplemental showing as contained in said Exhibits is true and correct to the knowledge of deponent.

Deponent further says that the papers hereto attached, marked collectively Exhibit "E", are the Profit and Loss statements of the complainant for the years 1892, 1893 and 1894. That they show for each of said years the total amount received by the Company for gas and from all sources, and the total amount expended, and therefore the net profits for said years. That said statements are true and correct to the knowledge of this deponent.

Deponent further says that under the circumstances and conditions existing in Des Moines economy and prudence require the manufacture and distribution of a combined water and coal gas, and this Company has for many years manufactured and sold such gas. That the gas plant with all its accessories is not larger than is necessary to fairly accommodate the demands of its business, with a reasonable provision for future growth. That he attaches hereto a statement showing an inventory of the property of the Company comprising its said plant marked Exhibit "F" and made a part hereof. That the actual cash invested by the Company in said plant was on the 31st of December, 1894, Four Hundred Sixty-six

1850 Thousand Five Hundred and Thirty-two and 93/100 Dollars ($466,532.93). That said investment has been carefully and prudently made, and in accordance with the highest requirements of the business in which the Company is engaged. That it would cost at the present time and with present prices for material, to reproduce the said plant at least Four Hundred and Seventy Thousand Dollars ($470,000.00).

Deponent further says that in the manufacture and distribution of the product he has exercised in every department the utmost economy consistent with efficiency. That as shown by the exhibits hereto attached it cost the Company during the year 1891 $1.056 per thousand cubic feet to manufacture and distribute its product. That it cost during the year 1892 $1.329 per thousand cubic feet. That it cost during the year 1893 $1.236 per thousand cubic feet. That it cost during the year 1894 93.06 cents per thousand cubic feet. That the cost for the year 1894 was abnormally low by reason of the unusually depressed prices of substantially all the materials out of which gas is made, and because the amount of repairs made by the Company during that year was less in the aggregate than the average repairs, taking one year with another. That in his opinion it is not probable that the Capital City Gas Light Company will be able to make and distribute gas within the next few years at a cost

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of less than $1.00 per thousand cubic feet, and it is more likely to exceed that sum than to fall below it.

Deponent further says that during the year 1894 of the Company's output about two-thirds was used for illuminating purposes, and about one-third for *duel* purposes; and he further says that substantially all gas bills are paid within the time necessary to give the consumer the benefit of the reduction for prompt payment; hence if the Company shall receive the maximum price for all its gas sold as prescribed in the said ordinance the average price
1851 received hereafter will be not more than $1.20. He further says that it will be impossible for the Company to receive such maximum price from all consumers, as is evidenced by the fact that although during the year 1894 the net price of illuminating gas was $1.70, and the net price of gas for fuel $1.50, the average price received by the Company for all its gas was $1.56.

Deponent further says that the profits that can be derived by the Company under the said ordinance after paying the expenses of operation and repairs will not be more than three per cent, and deponent is of the opinion that they will not reach two per cent.

Deponent further says that the consumption of gas per capita in Des Moines is very low. This condition is occasioned by the absence of any large manufacturing interests in the City, the excessive cheapness of fuel for general consum-tion, and the severe compet-ion of the -lectric light companies; it being well known that the three electric light companies in Des Moines have been doing business at a loss substantially all the time since their organization. There are other reasons which are apparent to every one who is acquainted with the City of Des Moines.

Deponent further says that the price charged by the company for gas during the year 1894 was greatly less than the average price paid by cities of like size (when the dissimilar conditions are reduced to a common basis) throughout the United States, as will be shown by documentary evidence which this deponent will submit upon the hearing.

Deponent further says that in stating herein the amount of the cash investment of the complainant he has included only the tangible property of the Company in Des Moines in use for the manufacture and distribution of gas, and has not included its investment of about One Hundred and Seventy-four Thousand Dollars, ($174,-
000.00) as shown in the exhibits attached hereto, in the ac-
1852 quisition of rights under Letters Patent, and for which the Company issued its bonds, which are now outstanding and unpaid, together with a large amount of interest.

Deponent further says that he believes that a reduction in the price of gas would have a tendency to increase the output, but not materially so, for the reason that, considering the price of other kinds of fuel and light in Des Moines, it is impossible for the Gas Company to compete upon even terms; that is to say, the consumer must prefer for some reason other than the price the use of gas, either for illumination or fuel.

(S'g'd) EDWARD G. PRATT.

Subscribed and sworn to before me by Edward G. Pratt this 7th day of June, 1895.

(S'g'd) C. O. WRIGHT,
[SEAL.] *Notary Public, Polk County, Iowa.*

UNITED STATES OF AMERICA,
Southern District of Iowa, ss:

I, Wm. C. McArthur, Clerk of the Circuit Court of the United States for the Southern District of Iowa hereby certify the above and foregoing to be a full true and complete copy of the affidavit of Edward G. Pratt filed June 14, 1895 in case #2330 Eq. Capital City Gas Light Co. vs. City of Des Moines et al., excepting the exhibits referred to and attached to said affidavit which are not copied, that the affidavit as above set out is a full true and complete copy of the same on file in the office of the Clerk at Des Moines.

In Witness Whereof, I hereunto set my hand and affix the seal of said Court at my office in the City of Des Moines in said District this 15th day of September A. D. 1911.

[Seal U. S. Circuit Court, Southern District Iowa.]

WM. C. McARTHUR, *Clerk,*
By LOUIS J. ADELMAN, *Deputy.*

1853 DEFENDANT'S EX. 40.

J. P. B.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

Affidavit of Edward G. Pratt in Circuit Court of the United States, Case of Capital City Gas Light Company, complainant vs. City of Des Moines, defendant. June 7, 1895. Exhibit D, part of statement 2.

			Cash invested.	Profit or loss.	Per cent on cash invested per aunum.
January	26" 1878.		$168,792.36	508.82	.30
"	15" 1879.		176,507.93	9,295.87	5.26
"	" 1880.		183,786.23	14,127.97	7.68
"	" 1881.		198,193.37	20,366.64	10.25
"	" 1882.		187,652.68	15,185.14	8.09
"	" 1883.		237,909.61	26,346.26	11.07
"	" 1884.		263,939.08	23,211.17	8.71
"	" 1885.		274,161.32	21,526.33	7.85
"	" 1886.		273,854.61	21,197.79	7.74
June	30, 1887.	(1 yr. 6 mo.)	281,512.27	32,664.10	7.74
"	" 1888.		322,426.05	28,272.08	8.77
"	" 1889.		332,934.33	21,959.73	6.60
December	31, 1889.	(6 Mos.)	346,846.91	12,650.83	7.29
"	" 1890.		373,163.81	25,849.91	6.91
"	" 1891.		449,500.77	24,053.62	5.35
"	" 1892.		455,658.51	20,801.71	4.59
"	" 1893.		460,582.16	18,330.14	3.98
"	" 1894.		466,532.93	36,119.93	7.74

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NOTE—The cash invested is arrived at by taking the total for each year, as shown on Statement #1 less the items checked X.

The Profits are taken from the Profit and loss a/c on the books, after eliminating any charges for dividends, bond interest and interest on capitalization.

Exhibit D: (The items 508:82 & :30 are written in red ink on original.)

1854 UNITED STATES OF AMERICA,
Southern District of Iowa, ss:

I, Wm. C. McArthur, Clerk of the Circuit Court of the United States for the Southern District of Iowa, hereby certify the above and foregoing to be a true copy of the first four columns "Statement # 2" marked Exhibit "D" attached to affidavit of Edward G. Pratt a witness in behalf of the Complainant in cause #2330 Equity in the Circuit Court of the United States for the Southern District of Iowa Central Division, wherein Capital City Gas Light Company was complainant and City of Des Moines, respondent, said columns relating to the Period, Cash invested, Profit or loss, Percent profit on cash invested per annum, as full true and complete as said four columns appear in the original Exhibit "D" aforesaid, now on file in my office in the City of Des Moines, Iowa in said District.

In witness whereof, I hereunto set my hand and affix the seal of said Court at my office in the City of Des Moines in said District this 25th day of July A. D. 1911.

[SEAL.] (Signed) WM. C. McARTHUR,
Clerk as Aforesaid.

1855 DEFENDANT'S EXHIBIT 41.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

J. P. B.

Estimate of Cost to Reproduce Present Plant of Capital City Des Moines Gas Co., Excluding Land.

Buildings	$25,000
Water Gas Ap.	23,000
Oil Storage (16,000 g.)	1,350
Tar wells	900
50,000 cf. holder and tank (Relief holder)	13,000
175,000 of holder & tank	28,000
300,000 cf. " "	40,000
6 benches retorts	18,000
2 exhausters & engines	3,500
Coal gas scrubber and condenser	2,500
2 station meters	5,200
1 St. main Governor	100
Forward	$161,050

W. C.

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Page 2. Est. Cost to Reproduce, D. M. G. Co. Plant.

	Fow'd from Page 1	161,050
	Gen'l piping around wks.	13,000
	Including all connections, sewers, fire pumps, ap. etc.	
	Purifiers and trays	12,000
	Elevator	500
	2-50 H. P. boilers, set	1,800
	Feed water heater	300
	3 sets scales	650
	Separator for tar	350
	Water tank	200
1856	Photometer & Laboratory	1,500
	Stable and tools	2,500
	Peloaze and Andion Con	750
	Cost to reproduce	194,600

Gas Works, not including land, $194,600.

8–3–'95. Walton Clark.

Estimate of Cost of Total Plant, Excluding Land, Capital City Gas Co.

	Cost to reproduce works	194,600
	To reproduce mains	163,849
	" " services	23,800
	" " meters	18,750
	" " St. Lamps	11,075
		$412,074
	Office furniture, books, etc.	2,500
	Working Capital	25,700
	Total	440,274

8–3–'95. Walton Clark.

1857 *Estimated Cost of Distributing Gas at Des Moines.*

Sales, 56,632,000 cf.

	Cashier	$1,000
	Bookkeeper	720
	Comp. clerk	600
	2 Collectors, etc.	1,200
	Porter and gen'l help	480
	Com't man	720
	½ Supt.	1,500
	Sec'y	1,500
	Total office force	7,720

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Office rent	1,680
Supplies	500
Genl. Expense	600
Land Rental	2,502
Taxes	5,414
Bad Debts	500
Litigation and accident	1,716
St. Lamps, operating	1,200
Stable Acct.	400
Reps. meters	800
" services	800
" Mains	1,500
Store Acct.	200
Advertising	500
Donation	500
Total	$26,532

Or 46.8 ¢ per cf. sold.

8–3–'95. Walton Clark.

1858 *Estimate of Cost of Coal Gas Plant and of Water Gas Plant, Sufficient for Needs of Des Moines.*

		Water gas.	Coal gas.
Retort House	16,800		
Purifier Bldg. etc.	11,800		
Buildings, Coal shed (1500 tons)	5,000		33,600
Generator House	9,000		
Coal shed	2,500		
Purifier Bldg. etc	8,000		
		19,500	
12 benches retorts (72 retorts)			40,000
Tar extractor			1,000
2-20′ x 6′ condensers			2,500
Horizontal Mechanical scrubbers			4,500
Ammonia Plant			1,500
2 Exhausters and engines		4,000	4,000
2-50 h. p. boiler set			2,200
Station meter 96″		2,200	2,200
Street main Gov. 12″		800	800
Pumps and heater (feed water)			1,000
Scales		500	500
Piping, sewers, etc.		7,000	7,000
Stable, horses, tools, office, etc.		5,000	5,000
Wells, (tar)		1,500	1,500
Purifiers (4)		12,000	12,000
Tar separators		500	

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Photometer and laboratory..... ..	1,500	1,500
Relief holder	8,000	
Elevator	500	
Water Gas Apparatus, boilers and Machinery	25,000	
Floor and foundations	2,500	
Holders 2-300000 cf. each	80,000	80,000
Oil tanks, 30000 G.	2,500	
	$173,000	$200,000
1859		
Mains	163,849	163,849
Services	23,800	23,800
Meters	18,750	18,750
Lamps	11,075	11,075
Office (city)	2,500	2,500
Working capital	25,700	25,700
	$418,674	$446,474

8-3-95. Walton Clark.

Estimate of Cost of Making Gas in Des Moines

	Coal gas per M cf.	Water gas per M cf.
Coal per ton 4.85		
Less coke 2.85		
" Tar 72 3.57 1.28 12.8¢.....	12.8¢	
Labor	12	5.80
Purification	1	1
Salaries	2.5	2.5
Rep. Works	5	3
Exp. Works, Water, Tools, etc.	4.50	3
Stable	.6	
Insurance	.7	.7
Engineer and Fireman	2	
Steam	2	1.25
Generator fuel		12
Oil		16.25
Gas in Holder, Total..... Leakage 8%.	43.1¢	45.5¢
Holder cost, Gas sold	46.8¢	49.4¢
Distribution	46.8¢	46.8¢
Cost of Meter.....	93.6	96.2

8-3-95. Walton Clark.

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1860 E. G. Pratt.

Works:

Land 279 feet x 280 ft, 6″	20,000	
Brick Building	25,000	
Frame building	2,500	
Retort arches and benches	19,440	
Water Gas apparatus, including two engines, pumps, and blowers, shafting, etc	25,300	
Scrubber and foundations, 10″ con	650	
Condenser and foundations 10″ con	1,800	
Exhauster and foundation (2) 10″ con	2,500	
Engines and foundations (2) 10″ "	750	
P. & A. Tar extracter	750	
Purifiers and trays 20 feet x 20 ft. x 5 ft	12,000	
Station meters and governors (7 ft. 6″) 10″ con	4,100	
Hydraulic elevator	725	
Station meter and bypass (7 ft. 6″) 10″ con	2,500	
250 H. P. Boilers (set)	1,100	
Tar Well 14 ft. x 10 ft	450	
Oil Tank 16 ft. x 10 ft	1,350	
Scales (3)	650	
W. G. Tar Separator 10 ft. x 8 ft	350	
Feed Water Heater 100 H. P	300	
Yard Connections	12,500	
Water, Steam and Sewer connections	4,550	
No. 1 holder (50,000) (60 ft. x 18 ft.)	15,000	
No. 2 " (175,000) (80 ft. x 36 ft.)	33,356	64
No. 3 " (300,000) (100 ft. x 36 ft.)	41,000	
Water Tank 9 ft. x 9 ft	1,500	
Ph-tometer and Chemical Apparatus	230,121	64

Purifying Building 101 ft. 2″ x 30 ft. 8″ x 27 ft. 9″.
Retort building 83 ft. 10″ x 33 ft. 4″ x 18 ft.
Generator building.

Brick:

Exhauster engine building 155 ft. 7″ x 26 ft. 4″ x 15 ft. 1″.
Engine, pump and blower building.
Scrubber, condenser and office.
Boiler building 25 ft. x 27 ft. — 20 ft.
Blacksmith building 15 ft. 6″ x 29 ft.
Oxide Lime and cement building 16 ft. 3″ x 24 ft.
33 ft. 1″ x 17 ft. 2″ x 7 ft. 6″.

Frame:

Coal shed 76 ft. x 42 ft. 4″.
Store room building 40 ft. 1″ x 26 ft. 2″ x 18 ft.

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1861 Street Mains:

3515 ft.	16"	Pipe	8,436
1122 "	14"	"	2,244
2290 "	12	"	3,435
2260 "	10	"	2,712
7020	8		7,020
33867	6		25,400.2
106706	4		53,353
49964	3		19,385.6
18926 "	2½	Pipe	3,785.8
			125,771.6
Add 40 cts. per ft. for paving			45,133.4
			170,905.0

1862 Service Pipes:

2500 services at $6		15,000
Pipe	$1.00	
Labor	3.50	
Cock, etc.	.50	
Meter connection	1.00	
Add for Paving	1,250.00	8,500
		23,500

Street Lamps:

800 Inc. Lantern, Post, Cock, Burner, Etc., at $15.00 each	12,000
Add for paving	3,200
	15,200

1863 Meters:

2500

2	lights	6 at	$5.00	30.0
3	"	1063 "	5.00	5,315.0
5	"	893 "	6.33	5,652.6
10	"	187 "	8.00	1,496.0
20	"	40 "	11.00	440.0
30	"	14 "	15.00	210.0
45	"	8 "	22.00	176.0
60	"	7 "	30.00	210.0
80	"	1 "	41.33⅓	41.3
100	"	3 "	50.00	150.0
150	"	1 "	76.67	76.6
200	"	1 "	106.67	106.6
2000	"	1 "	400.00	400.0
				14,304.3
Ave. 6.10				
Add for setting $1.00 each				2,225.0
				16,529.3

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1864 Recapitulation:

Works		230,121.64
Street Mains		170,905.05
Service Pipes		23,500.00
Street Lamps		15,200.00
Meters		16,529.37
Office furniture	$2,500.00	
Materials and supplies including working capital	25,000.00	
		27,500.00
		483,756.06

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Manufacturing.

		Cost per thousand cu. ft.
Boiler Fuel	1,349.42	.0238¢
Expense Works	1,799.98	.0318
Fuel under retorts	625.17	.0110
Gas Coal	12,243.97	.2161
Generator Fuel	3,606.50	.0636
Insurance	410.03	.0072
Mfg. Labor Coal Gas	2,129.65	.0376
Mfg. Labor Water Gas	2,331.17	.0411
Mfg. Supplies	84.13	.0015
Oil	6,543.56	.1155
Exide	39.80	.0007
Purification Labor	44.80	.0008
Reps. Wks. Coal Gas	790.21	.0139
Reps. " Water "	1,124.80	.0199
Water Tax	242.98	.0043
Expense Stable	368.95	.0065
Tools	188.44	.0033
Exp. Store Room	6.89	.0001
Salaries (½ Supt.)	1,500.00	.0265
	35,430.45	.6253

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Less Gas on hand Jan. 1, '95	302.82			
Less Gas on hand Jan. 1, '94	103.18			
		199.64		
		35,230.81		
Credit residuals		7,615.41		
			27,615.40	.4874¢

Distribution.

Exp. Gen-ral	1,310.89	.0231¢	
" Office	2,294.34	.0405	
Burner	123.48	.0022	
Distribution Labor	2,117.34	.0374	
" Supplies	7.79	.0001	
Reps. Meters	669.01	.0118	
" Services	629.34	.0111	
" Mains	1,242.16	.0219	
St. Lamp Oper.	1,596.73	.0282	
Salaries (less ½ Supt.)	4,416.00	.0779	
Exp. Stable	368.96	.0065	
Tools	188.44	.0033	
Exp. Store Room	62.03	.0011	
		15,026.51	.2652¢

Expense.

Gas sales (worthless bills, 1894)	479.54		.0085
Lamp " " " "	9.80		.0002
Lamp rent " " "	4.25		.0001
Tar sales " " "	5.00		.0001
Coke " " "	8.37		.0001
Meter rent sales " " "	.25		.000004
Exp. Extra	559.95		.0099
Gas Stoves	174.08		.0031
Interest	73.47		.0013
1866 City Litigation	617.50		.0109
Litigation	99.40		.0018
Soliciting New Business	350.92		.0062
Supt. Meeting	110.40		.0019
Taxes	5,414.90		.0936
House and Land Rental	2,184.91		.0386
		10,092.74	.1781
		52,734.65	.9307

E. G. PRATT.

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1867 *Valuation of Existing Gas Plant at Des Moines.*

Buildings, machinery, etc.	$194,600.00
Mains	165,845.15
Services	23,800.00
Meters	18,750.00
Street Lamps	11,075.00
Office furniture, supplies, etc.	2,500.00
Working capital, horses, wagons, tools, etc.	25,700.00
Land	20,000.00
	$460,270.15

Detailed Valuation of Buildings, Machinery, etc.

Office and Generator Bldgs.		8,000.00
Retort House		5,500.00
Purifying house		7,200.00
Lime and oxide store		1,200.00
Boiler House		1,500.00
Blacksmith shop		500.00
Store House (frame)		600.00
Coal shed		500.00
Oil storage		1,350.00
Exhausters & Engines		900.00
Scrubbers and condensers, coal gas		2,500.00
Tar extractors		750.00
2 Station meters		5,000.00
1 Street Governor		600.00
Piping about works		8,000.00
Gas, Steam and water connections		5,000.00
Purifiers and trays		12,000.00
Elevator		500.00
2 50 *A.* P. Boilers		1,800.00
Feed water heater		300.00
2 sets of scales		650.00
Tar separater		350.00
Over-head water tank		400.00
Photometer & Laboratory		1,500.00
Horses, wagons, tools, etc.		2,500.00
6 benches retorts		18,000.00
1 50-M. Holder	13,000.00	
1 175-M "	28,000.00	
1 300-M "	40,000.00	
		81,000.00
Water gas plant		23,000.00
		194,600.00

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1868 *Detailed Valuation of Mains Laid Complete, Inclusive of Material and Labor.*

3515	16″	$2.30 per ft.	$8,084.50
1122	14″	2.00	2,240.00
2290	12″	1.30	2,977.00
2260	10″	1.00	2,260.00
7020	8″	.85	5,967.00
33867	6″	.70	23,706.90
106706	4″	.45	48,017.80
49964	3″	.35	17,487.40
18929	2½″	.25	4,732.25
Pipes over bridges consisting of 10″, 14″ & 16″			2,838.00
Paving on 21 miles at 40¢ per lineal foot			45,534.40
			163,845.15

Cost of Reproducing Works on an Exclusive Coal Gas Basis.

Benches	40,000.00
Retort house	16,800.00
Tar Extractor	1,000.00
2 Exhausters, 500,000 cu. ft. capacity each	4,000.00
2 50 H.P. Boilers	2,200.00
2 Condensers 20′ x 6 and containing 260 2½″ tubes.	2,500.00
Standard Scrubber, 500,000 capacity	4,500.00
4 Purifiers 20′ x 20′ x 5′	12,000.00
1 98″ Station meter	2,200.00
1 12″ Street governor	800.00
Ammonia plant	1,500.00
Photometer, Laboratory, etc.	1,500.00
Boiler feed and water pumps	1,000.00
Pipes about works	7,000.00
Scales	500.00
Barn, horses, wagons, office furniture, etc.	5,000.00
Tar and Ammonia wells	1,500.00
Purifying and condensing room 108′ x 55′ x 2′	11,800.00
Coal Store	5,000.00
2 300,000 Holders in brick work bands	80,000.00
	200,800.00
Mains, Services, Meters, Lamps, Working Capital, etc.	260,338.00
Total	461,138.00

COPY BOUND

1869 *Cost of Reproducing Works on an Exclusively Water Gas Basis.*

Generator House 35′ x 50′ x 35′	$9,000.00
Waters Gas plant, inclusive of Eng. Boilers, Blowers and Condensers	25,000.00
Hydraulic elevator	500.00
Oil Storage tank 30,000 gals.	2,500.00
Tar Separator	500.00
2 Exhausters and Engines 500,000 capacity each	4,000.00
4 Purifiers 20′ x 20′ x 5′	12,000.00
1 98″ Station Meter	2,200.00
1 12″ Street Governor	800.00
Photometer & Laboratory	1,500.00
Scales	500.00
Piping around works	7,000.00
Barn, Horses, Wagons, office furniture, etc.	5,000.00
Tar and Ammonia Wells	1,500.00
2 300,000 Holders, brick work tanks	80,000.00
Relief holder in store tank	8,000.00
Coal Store (Brick)	2,500.00
Purifying Building 80′ x 55′ x 25′ Wood & Iron	8,000.00
	170,500.00
Flooring and Foundations	2,500.00
	173,000.00
Mains, services, meters, lamps, working capital, etc.	260,338.00
	433,338.00
Coal Gas Works	461,138.00
Water Gas Works	433,338.00
Difference in favor of Water Gas	27,800.00

Estimated cost per 1,000 cu. ft. of water gas in holder on the basis of 61,000,000 cu. ft. made.

Generator fuel	$12.00
Boiler fuel	1.25
Oil, 5 gallons	16.25
Labour	5.80
Purification	1.00
Salaries	2.50
Repair Works	3.00
Expense Works, water, tool, etc.	3.00
Insurance	.70
Cost per 1,000 of gas made	45.50
Cost of leakage	3.90
Cost per 1,000 of gas sold	**49.40**

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Estimated cost per 1,000 cu. ft. of Coal Gas in holder on the basis of 61,000,000 cu. ft. made.

Coal	$12.80
General Labour, stokers and firemen	12.00
Exhausting	2.00
Exhausting engineers	2.00
Repaid works	5.00
General expenses	3.50
Tools	1.00
Salaries	2.50
Stable	.60
Insurance	.70
Purification	1.00
Cost per 1,000 of gas made	43.10
Cost of leakage	3.70
Cost per 1,000 of gas sold	46.80

1870 *Estimated Cost of Distribution per* 1,000 *cu. ft. of Gas Made, on the Basis of* 61,000,000 *cu. ft.*

Cashier	$1,000.00
Bookkeeper	720.00
Complaint clerk	600.00
2 Collectors	1,200.00
1 Janitor	480.00
1/2 Superintendent	1,000.00
1 Complaint man	720.00
Office Rent	1,680.00
Supplies	500.00
Secretary	1,500.00
General expense	600.00
Rent of Land	2,502.00
Taxes	5,404.00
Bad Debts	500.00
Litigation	716.00
Street Lamp Operation	1,200.00
Stable	400.00
Repair Meters	800.00
Repair Services	800.00
Repair Mains	1,500.00
Stove Account	200.00
Advertising	500.00
Donations	500.00

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$\frac{25,532.00}{61,000,000} = 45.06$ Cost of distribution of gas made.

$\frac{25,532.00}{56,000,000} = 45.60$ Cost of distribution of gas sold.

Average cost of manufacture per 1,000 of gas sold, mixed gas.	48.10
Average cost of distribution per 1,000 of gas sold.....	45.60
Cost of mixed gas at burner.....	93.70

Estimated cost at burner in general working, 95¢, according to proportion of mixture.

GEO. H. HARPER.

1871 *Estimated Value of Present Plant of the Capital City Gas Lt. Co. at Des Moines, Iowa.*

Office and Generator buildings	$8,000.
Retort House	5,500.
Purifying House	7,200.
Lime and Oxide House	1,200.
Boiler House	1,500.
Blacksmith Shop	500.
Frame Storehouse	600.
Coal Shed	500.
Oil Storage Tanks	1,350.
Tar wells	900.
50,000 cu. ft. holder and brick tank.....	13,000.
175,000 " " " " " "	28,000.
300,000 " " " " " "	40,000.
Water-gas apparatus	23,000.
Exhausters and Condensers	3,500.
Scrubbers and Condensers	2,500.
P. & A. Tar extractor	750.
2 Station Meters	5,000.
1 Connolly Governor	600.
General yard connections	8,000.
Amount forward to Sheet #2	$151,600.

W. H. W.

1872 *Estimated Value of Present Plant.*

Sheet No. 2.

Amount brought forward	$151,600.
4 Purifiers and connections	12,000.
Hydraulic Elevator	500.
2 50 H. P. Boilers set	1,800.
Feed Water Heater	300.

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Scales (3 sets)	650.
Tar Separator	350.
Water Tank and setting	400.
Photometer and Laboratory	1,500.
Tools, Stables, Wagons, Horses, etc.	2,500.
6 benches of "Sixes" semi-regulator furnaces	18,000.
Gas, Steam and Water connections, pumps, etc.	5,000.
Value of works	$194,500.
2500 services at $6.00 and paving 1250″ at 7.04	23,800.

Street Lamps.

300 complete at $18.00 each	$5,400.	
500 idle posts	3,625.	
200 lanterns	650.	
Paving 200 lamp services	1,400.	
		11,075.
Forward to Sheet #3		$229,375.

1873 *Estimated Value of Present Plant.*

Sheet No. 3.

Amount brought forward			$229,375.
2500 meters at $6.00		$15,000.	
" connections at $1.50		3,750.	
			18,750.
Street Mains:			
3,515 ft. 16″	$2.30	8,084.50	
1,122 " 14″	2.00	2,244.00	
2,290 " 12″	1.30	2,977.00	
2,260 " 10″	1.00	2,260.00	
7,020 " 8″	.85	5,967.00	
33,867 " 6″	.70	23,706.90	
106,706 " 4″	.45	48,017.40	
49,964 " 3″	.35	17,487.40	
18,929 " 2½″	.25	4,732.25	
225,673 "	costing	$125,771.65	
22 miles under paving estimated at 40¢ for re-paving		45,134.40	
			170,906.05
Office Furniture			2,500.00
Working Capital represented in cash and value of material kept on hand			20,000.00
Value of plant			$441,531.05

Not considering values of land.

WM. H. WHITE, *Engineer.*

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1874 *Estimate for a New Water Gas Plant, Having a Daily Minimum Capacity of 500,000 c. ft. to be Erected at Des Moines, Iowa.*

Generator House 55′ x 50′ x 35′	9,000
Water Gas Apparatus, complete 2–6″ sets, Boilers, blowers—condensers & Scrubbers	25,000
Floors and special foundations	2,500
Hydraulic Elevator	500
Relief Holder 50,000 c. ft.	8,000
Oil Storage, 30,000 gals.	2,500
Tar Separators	500
2 Exhausters & Engines, bye pass, Governors & Connections	4,000
4 Purifyers, complete Connections (″O′ x 20′ x 5) with seal & 16″ connections	12,000
1 Station meter 98″-16″ connections	2,200
Connolly Street Governor	800
Photometer & Laboratory appr.	1,500
Large & Small Scales	500
General Yard piping, drains, etc	7,000
Barn, storehouse, horses, wagons, harness, general tools & fittings	5,000
2-300000 ctf. Gas holders in masonry tanks	80,000
Amount forward, Sheet 2	$161,000

W. H. W.

1875 *Estimate Water Gas Plant, Sheet 2.*

Forward	161,000
Tar Wells	1,500
1 Brick coal shed	2,500
Building for purifyers, etc	8,000
Total cost	$173,000

Covering complete construction and equipment of the plant.

WM. HENRY WHITE, *Engineer.*

1876 *Estimate for Coal Gas Plant capable of producing* 500,000 *c. ft. daily, erected in Des Moines, Iowa:*

Retort House building of brick, Iron & Slate roof, iron & wood floor complete, 80′ x 60′ x 35′	16,800
Purifyer & Condenser house, brick, wood & slate roof, high basement, also Boiler, Engine & Exhauster house, complete	11,800
Brick Coal store house, wood & slate roof	5,000
Tar and Ammonia wells	1,500

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12 benches of "sixes," semi-regenerator furnaces, stack complete in foundations and iron work	40,000
4 Purifyers 20′ x 20′ x 5 with Centre-Seal and 16″ connections	12,000
2-500,000 cft. exhausters with engines, 16″ connections, Byepasses & Governors complete	4,000
2 Tar extractors	1,000
2 Condensers 20′ — 6″ complete	2,500
Amount forward sheet 2	$94,600

W. H. W.

1877 *Coal Gas Estimate Sheet No. 2.*

Amount forward	$94,600
1-96″ Station Meter	2,200
1-Connolly Street Governor	800
1-Ammonia Plant	1,500
2-300 cft. Gas holders, masonry tanks	80,000
2-50 H. P. Boilers set	1,800
Photometer & Laboratory appr	1,500
Pumps, feedwater heaters, Tank & Connections erected	1,000
Scales, large & small	500
Yard Mains & special castings, drains & general piping	7,000
Barn, Storehouse, horses, wagons, general tools & fittings, office furniture, etc	5,000
1 Scrubber (mechanical) complete	4,500
Total Cost	$200,400

Covering connections & Byepasses and individual foundations.

WM. HENRY WHITE,
Engineer.

1878 UNITED STATES OF AMERICA,
Southern District of Iowa, ss:

I, Wm. C. McArthur, Clerk of the Circuit Court of the United States for the Southern District of Iowa, hereby certify the above and foregoing to be full true and complete copies of the following pages of the transcript of the testimony in #2330 Equity, Capital City Gas Light Company vs. City of Des Moines, lately pending in the Circuit Court of the United States for the Southern District of Iowa, at Des Moines, as follows, to-wit: Page 421-422-423-424-425-426-427-428-429-430-431-432-449-450-451-452-453-454-455-456-457-458-459; as full, true and complete as the originals thereof now on file in my office in the City of Des Moines, Iowa, in said District.

In witness whereof, I hereunto set my hand and affix the seal of said Court at my office in the City of Des Moines in said District this 24th day of July, A. D. 1911.

[SEAL.]

WM. C. McARTHUR,
Clerk as Aforesaid.

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I further certify that pages 421 to 425, inclusive, of said transcript are figures submitted by witness, Walton Clark, in connection with his testimony; that pages 426 to 432, inclusive, of said transcript are figures submitted by E. G. Pratt; that pages 449 to 452, inclusive, are figures submitted by witness Geo. H. Harpir; that pages 453 to 459, inclusive, of said transcript, are figures submitted in connection with the testimony of Wm. Henry White, all of the aforesaid witnesses being witnesses for the complainant in the above entitled cause #2330 Equity.

WM. C. McARTHUR,
Clerk as Aforesaid.

1879 DEFENDANT'S — 42—J. P. B.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

In the Circuit Court of the United States in and for the Southern District of Iowa, Central Division.

CAPITAL CITY GAS LIGHT COMPANY, Complainant,
vs.
CITY OF DES MOINES, Defendant.

Affidavit of Edward G. Cowdery.

UNITED STATES OF AMERICA,
Southern District of Iowa, Polk County, ss:

Edward G. Cowdrey being first duly sworn, upon his oath says: That he is a resident of the City of Milwaukee, in the State of Wisconsin. That for twenty years last past he has been connected with the manufacture and distribution of gas, and is now the General Manager of the Milwaukee Gas Company, a corporation doing business in the City of Milwaukee, and supplying said city and its inhabitants with gas for illuminating purposes. That the said Milwaukee Gas Company manufacturers and distributes a combined coal and water gas, and he is therefore familiar with the manufacture of coal *coal* gas as well as water gas, and understands the conditions and circumstances under which a combined gas should be manufactured and sold. That in his management of the said Milwaukee Gas Company and his long connection with the business aforesaid he has become familiar and is now familiar with the cost of constructing and operating plants. That the present net price of gas for illuminating purposes in the City of Milwaukee is One Dollar per thousand cubic feet for illuminating purposes, and Eighty Cents per thousand cubic feet for fuel purposes. That the said city has a population of about two hundred and sixty thousand people, and the output of the said Milwaukee Gas Company for the
1880 last year was substantially seven hundred million cubic feet.

That the said Milwaukee Gas Company is not in any way interested in or connected with the United Gas Improvement Com-

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pany of Philadelphia, nor is this deponent in any way connected with or interested in said last named company.

Deponent further says that at the request of the Capital City Gas Light Company he spent two days, to-wit: June 5th and 6th, 1895 in the examination of the gas plant belonging to said last named Company, and in becoming acquainted with the conditions under which gas is manufactured and sold in the said City of Des Moines. That through his examination he has become familiar with the said plant except the mains, which are buried in the streets, and his information with respect to them and the number of consumers, the yearly output, the taxes paid by the Company, and the amount paid for street lamp operation, he has received from Edward G. Pratt, the Manager of the said Company.

Deponent further says that he believes that under the conditions existing in Des Moines, which conditions are permanent, the gas manufactured for the city and its inhabitants should be a combined coal and water gas. The reasons for this opinion are, that the difference between the cost of a combined gas and either coal or water gas of equal candle power at Des Moines is very small. The combined gas, mixed about half and half, produces the best effect in lighting it is more satisfactory to consumers, and is the easiest and most economical to distribute. It removes the producer from the substantial monopoly of the distributor of oil, and it is clearly for the best interests of the City of Des Moines that its Gas Company shall continue the manufacture of such combined gas.

Deponent further says that to fairly accom-odate a city of the population of Des Moines, it would cost at the present time to
1881 construct a coal gas plant, exclusive of mains and miscellaneous appurtenances (for the cost of which deponent refers to a subsequent statement made in connection with the valuation of the prese*b*t plant of the Capital City Gas Light Company) $237,293.00. This amount included an estimated cost of land necessary for the construction and operation of the works of $46,000.00. A sheet containing the items of the cost hereinbefore states is attached hereto, marked Exhibit "A" and made a part hereof. It would cost to construct at the present time a water plant sufficient to accom-odate a city of the population of Des Moines (excluding the cost of mains and miscellaneous expenditures as aforesaid), $191,250.00. The items of such cost are shown in a paper marked Exhibit "B" hereto attached and made a part hereof. In the City of Des Moines the holder capacity should be at least five hundred thousand cubic feet, and it will be observed that in the two sheets to which deponent has made reference some of the apparatus and machinery is intended to be duplicated. It is essential that in the machinery of a coal gas plant the retorts should exceed by from ten to twenty per cent, the capacity of the holders, and the machinery should be to a great extent duplicated, particularly so if no immediate extensions are required, as a gas plant is in operation twenty-four hours a day and three hundred and sixty-five days in a year. It is therefore necessary, to overcome the danger to a continuous supply occasioned by breakage or accidents of various kinds, that

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the important manufacturing machinery should be in duplicate. In a water gas plant it is absolutely necessary to have the manufacturing plant duplicated, and each portion large enough to supply the largest demand of any day in the winter.

Deponent further says that he has been requested to state whether the present plant of the Capital City Gas Light Company is of greater capacity than it should be. After carefully examin-
1882 ing it, he is clearly of the opinion that it is not larger or of greater capacity than prudence and good business management require.

Deponent has been further requested to state what it would cost to reproduce the existing plant in operation in the City of Des Moines. In his opinion it would cost more to reproduce it than the amount of the investment account as claimed by the Capital City Gas Light Company, for the reason that there are buildings and other appliances serving their full purpose which would cost largely more to reproduce than their present cash value, and he has therefore carefully inventoried the said plant, and applying to the plant the prices now prevailing for material and construction, but depreciating a portion of the plant by reason of long use, he states to the Court that the present cash value of the said plant, including street mains and miscellaneous parts of the system necessary to its use, is $454,414.35. This amount is properly divisible into three parts, as follows:

Present cash value of works	$226,601.00
Present cash value of mains	153,863.35
Present cash value of miscellaneous construction	73,950.00
Total	$454,414.35

He attaches an itemized statement of said values hereto, marks the same Exhibit "C," and makes it a part hereof.

Deponent further says that he has examined the conditions existing in the City of Des Moines with reference to the reasonable cost of producing and distributing gas in said City. That in so doing he has not examined the books of the Capital City Gas Light Company, and has received no other information with respect to the items of its actual cost save as hereinbefore stated. That the necessary and reasonable cost for the combined coal and water gas of twenty-two candle power in the holder is 47.2 cents per thousand cubic feet upon the gas actually delivered to consumers.
1883 That the cost of distribution and general expense not included in the cost of manufacture is 43.78 cents per thousand cubic feet; so that the whole cost to the Company in delivering gas to consumers in the City of Des Moines is 90.98 cents per thousand cubic feet. A statement showing the items of such cost as computed by him is hereto attached, marked Exhibit "D" and made a part hereof. In this connection deponent desires to state that it may be that the actual cost of the Company has been greater than the cost as so computed, inasmuch as there may be circumstances

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unknown to the deponent which would add to his estimate. He further desires to state that the cost of all kinds of materials entering into the manufacture of gas was during the year 1894 abnormally low, and that, to say the least, it is extremely doubtful whether in the near future it will be possible for any company to manufacture and distribute gas as cheaply as was done during the said year 1894.

Deponent further says that the price charged for gas in other cities is no guide to the price that should be charged in the City of Des Moines, unless the strictest attention is given to the varying conditions existing in the cities with which a comparison is made, and said dissimilarities are reduced to a common basis. For instance, the cost of gas coal, anthracite coal, furnace coke and oil is extremely high in Des Moines because of its remoteness from the sources of supply of these various elements in the manufacture of gas, and the consequent long haul by rail. It is to be noted, again, that the coke made by a gas company as a residual can be profitably or unprofitably sold, depending upon the prices of domestic fuel. In cities where coal for general consumption is cheap, the gas company ought to produce as small an amount of coke for sale as possible. Again, severe competition from the electric light may so restrict the consumption of gas as to make it practically im-
1884 possible to secure a large output. Again, that expense which is incident to the operation of street lamps is very different in different cities. Again, the taxes paid by gas companies are extremely unequal, it being within the knowledge of deponent that in some cities the taxes amount to no more than three cents per thousand feet; in others to as much as fifteen cents per thousand feet. Again, some companies, under stress of circumstances, are doing business at an actual loss, and therefore their prices present no criterion for a reasonable charge.

Deponent further says that it is his opinion that a company engaged in the business of manufacturing and distributing gas, after paying all expenses of operation and repairs, should earn not less than ten per cent. per annum upon the amount of money actually invested in the property; and in those places where money can be loaned upon unquestioned security at seven or eight per cent. per annum the fair return upon the gas business would not be less than twelve per cent. per annum upon the amount of the investment. His reasons for this opinion are, that the principal invested in a gas plant can never be returned. Whenever the business ceases the money invested in it is substantially lost, and in estimating the proper yearly return attention should be given to that fact. It is a hazardous business, subject to explosions, fires and accidents of various kinds, and these risks very sensibly affect the return that should be permitted. It is a competitive business that might be very largely destroyed by new inventions or discoveries. The past history of the manufacture of gas has been full of such incidents, and it will be remembered that within a few years the value of gas property was seriously impaired by the introduction of electric lighting. The investor, in determining whether to engage in the

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business, must necessarily consider these things, and due
1885 allowance for them should be made in determining the reasonable yearly return upon capital so employed. It will be found from the experience of gas companies that a yearly return of ten or twelve per cent., depending upon the locality, will not give to the investor the ordinary legal rate of interest, and eventually return to him his original capital.

Deponent further says that having had experience in the reduction of the price of gas, as is shown by the price now charged by the company with which he is connected, and knowing the probability of what the increase of consumption will be upon a reduction in price, he is of the opinion that the price of $1.30 for gas for illuminating purposes and $1.00 for fuel purposes in the City of Des Moines will not yield to the Capital City Gas Light Company more than one-third the yearly return to which deponent believes it is entitled as hereinbefore stated.

(S'g'd) E. G. COWDERY.

Subscribed and sworn to before me by the said Edward G. Cowdery this 6th day of Jund, 1895.

(S'g'd) E. R. SEATON,
[SEAL.] *Notary Public, Polk County, Iowa.*

1886 EXHIBIT "A."

Cost of Works—Coal Gas.

Retort House, fire-proof, iron roof and slate, 45 x 125 x 30	$15,187.50
Iron floor and wood floor combined, 2640 sq. ft.	1,056.00
Purify. House, brick, 35 x 60 x 25	4,200.00
Cond. " " 30 x 60 x 25	3,600.00
Boiler " " 30 x 20 x 20	960.00
Oxide shed, frame, 60 x 60 x 10	540.00
Coal shed, brick, 3,000 tons	5,000.00
Store House and Meter shop, frame	600.00
Tar wells	1,500.00
12 benches of 6's and found. comp., at $3,500.00	42,000.00
2 purifiers 20 x 20 x 5 and con. and found. comp.	6,500.00
2 Exhausters, capacity 500,000 per day, and con. and found. comp.	2,500.00
2 Tar Extractors and con. and found. comp.	1,000.00
2 Condensers, 500,000 ft. per day, and con. and found. comp.	2,000.00
1 Scrubber, 500,000 ft. per day, and con. and found. comp.	3,500.00
1 Meter, 500,000 ft. per day, and con. and found. comp.	2,000.00
1 street governor and con. and found. comp.	600.00
Concentrating apparatus for Ammonia	1,500.00
2 Holders, 200,000 ft. each, built to inc. to 400,000 each	80,000.00

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2 50 H. P. Boilers and con. and setting	1,200.00
Scales	450.00
1 feed water heater	250.00
1 Water tank, elevated	250.00
	$176,393.50

1887 Forward	$176,393.50
Pumps and settings	400.00
Miscellaneous piping around works, all kinds	8,000.00
Photometric and laboratory apparatus	1,500.00
Tools at works, horses and wagons and barn and outfit, and furniture	5,000.00
Land	46,000.00
Total	$237,293.50

1888 EXHIBIT "B."

Cost of Works—Water Gas.

2 Water Gas sets, each 500,000 cu. ft., comp.	$20,000.00
Building, brick, 30 x 50 x 30	3,500.00
Add. Purifiers (needing larger capacity than coal gas)	2,000.00
Coal Storage, brick 1,000 tons capacity	1,800.00
Oil " 30,000 gal.	3,000.00
Purify. House, brick 35 x 60 x 25	4,200.00
Boiler " " 30 x 20 x 20	960.00
Oxide shed, frame, 60 x 60 x 10	540.00
Storage House and Meter shop, frame	600.00
Tar Wells	1,500.00
2 Purifiers, 20 x 20 x 5 and con. and found. comp.	6,500.00
2 Tar Extractors and con. and found. comp.	1,000.00
1 Meter, 500,000 ft. per day, and con. and found. comp.	2,000.00
1 Street governor, and con. and found. comp.	600.00
2 Holders, 200,000 ft. each, built to inc. to 400,000 each	80,000.00
2 50 H. P. boilers and con. and setting	1,200.00
Scales	450.00
1 feed water heater	250.00
1 Water tank, elevated	250.00
Pumps and settings	400.00
Miscellaneous piping around, works, all kinds	8,000.00
Photometric and laboratory apparatus	1,500.00
Tools at works, horses and wagons and barn and outfit and furniture	5,000.00
Lands	46,000.00
Total	$191,250.00

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1889 EXHIBIT "C."

Cash Value of Capital City Gas Light Co. Plant Works.

Brick retort House, 46 x 80 x 20 (old)	$3,680.	
Purify. House, 26 x 100 x 25 (old)	3,250.	
Boiler & Eng. House, 60 x 30 x 18 (old)	1,296.	
Purifying House, 101 x 31 x 30 (new)	8,000.	
Frame Store House	625.	
Frame Coal Shed	500.	
		$17,351.00
Oil Storage		1,350.00
Tar Wells		1,350.00
1 #1 Holder, 50,000 capacity	8,000.	
1 #2 " 175,000 "	26,000.	
1 #3 " 300,000 "	40,000.	
		74,000.00
6 benches of 6's, at $3,000		18,000.00
Iron floor, 600 sq. ft., at $.50		300.00
Water Gas App.		20,000.00
2 Payne Eng. Blowers, Pumps and shafting		1,200.00
2 Exh. and 2 Eng. and found		3,500.00
Scrubber and condenser and found. (same room)		2,500.00
P. & A. Tar Extracter		750.00
2 Meters, 7½ x 7½, and found. and conn		5,000.00
1 Connelly gov		600.00
Miscellaneous gas connections around works		8,000.00
Gas, steam and water connections around works		5,000.00
Purifiers and trays		12,000.00
		$170,901.00
1890 Forward		$170,901.00
Hydraulic Elevator		800.00
2 50 H. P. Boilers and con		1,200.00
1 feed water heater		300.00
3 sets scales		450.00
1 water gas tar separator		250.00
1 elevated water tank		200.00
Photometric and laboratory, etc		1,500.00
Tools at works, horses, wagons and barn outfit		5,000.00
Land		46,000.00
Total		$226,601.00

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Street Mains.

Main pipe costing $26.00 per ton, delivered in Des Moines.

3,515 Ft.	16	at	$2.00	$7,030.00
1,122 "	14	"	1.70	1,907.40
2,290 "	12	"	1.40	3,206.00
2,260 "	10	"	1.20	2,712.00
7,020 "	8	"	1.00	7,020.00
33,867 "	6	"	.75	25,325.25
106,706 "	4	"	.50	53,353.00
49,964 "	3	"	.45	22,483.80
18,929 "	2½	"	.30	5,678.70
860 "	river pipe at $3.00 per ft.			2,580.00
112,836 "	ditch paved at $.20			22,567.20
Total cost of 42 $\frac{3913}{5280}$ miles main				$153,863.35

1891 Miscellaneous Construction.

2,500 services to lot line free, 35 ft. each, at $.20	$17,500.00
2,500 Meters, at $8.00 average	20,000.00
2,500 Meter connections, at $2.00	5,000.00
2,500 Meters set, at $.50	1,250.00
300 Lamp posts in use, complete, at $18.00	5,400.00
500 " " idle, at $6.00	3,000.00
200 Lanterns " " 4.00	800.00
Office furniture and books	4,000.00
Tools in street wagons, etc	2,000.00
Working capital to carry stock, oil, coal, pipe, purifying material, outstanding accts., etc	15,000.00
Total	$73,950.00

1892 EXHIBIT "D."

Cost of Manufacture.

Coal Gas.

6,365 tons coal, at $4.85		$30,870.25
Coke, 850 lbs. per ton, at $6.00 per ton coke, *coke*	$16,230.00	
Tar, per ton coal, $.60	3,819.00	
Ammonia, per ton coal, $.30	1,909.50	
Total received	$21,958.50	$21,958.50
Net cost coal		8,911.50
Purifying 61,100 M, at $.01		611.00
Miscellaneous material		500.00
Labor, 61,100 M, inc. Sup't, at $.18		10,998.00
Repairs, at $.05		3,055.00
Unload, coal 6,365 tons, at $.10		636.50
Total		$24,712.25

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Water Gas.

61,100 Water gas, at 42 lbs. coke, at $6.00 per ton...	7,698.00
61,100 M ft., at 28 lbs. steam coal at $1.10.....	940.94
61,100 M 4. 3/4 gal. crude oil at $.03½.....	10,157.87
61,100 M purifying at $.01	611.00
Labor at $.70 per M inc. Sup't	4,277.00
Repairs, at $.02	1,222.00
Miscellaneous Exp., material, water stable and Ins. at $.03	1,833.00
Total	$26,739.81

1893 Distribution and General Expenses.

Street and Meter Dep't.....	$4,900.00	
Reg. and Coll. at $.01 per M	566.62	
Soliciting new business	350.00	
Complaints	400.00	
Office, 1 bookk., *i* cash'r, 1 stenog.....	2,400.00	
Office supplies	500.00	
		$9,116.62
Salaries Sec'y and ½ Supt.	4,200.00	
Rent	1,200.00	
Gen. Exp. Travel, teleph., etc.	600.00	
		6,000.00
Taxes	5,414.90	
Law claims and accidents	1,000.00	
Bad debts	500.00	
Gas Stove business	200.00	
Stable Exp. for dist.	400.00	
Miscellaneous items	500.00	
Street Lamp operation	1,600.00	
Interest	75.00	
		9,689.90
		$24,806.52

Cost of Manufacture	47.2 cents	
" " Distribution	43.78 "	
Total	80.98 "	per thousand.

(Endorsed:) Filed Jun. 14, 1895. Ed. R. Mason, Clerk.

1894 UNITED STATES OF AMERICA,
Southern District of Iowa, ss:

I, Wm. C. McArthur, Clerk of the Circuit Court of the United States for the Southern District of Iowa, hereby certify the above and foregoing to be a full, true and complete copy of the affidavit of Edward G. Cowdery, a witness on behalf of the Complainants,

filed June 14, 1895 in cause #2330—Equity, Capital City Gas Light Co. vs. City of Des Moines, as full, true and complete as the original thereof now on file in my office in the City of Des Moines, Iowa, in said District.

In witness whereof, I hereunto set my hand and affix the seal of said Court at my office in the City of Des Moines in said District this 24th day of July, A. D. 1911.

[SEAL.] WM. C. McARTHUR,
Clerk as Aforesaid.

1895 DEFENDANT'S EX. 43.

9/20/11.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

1896 DES MOINES GAS COMPANY
VS.
THE CITY OF DES MOINES.

September 19, 1911.

Edward W. Bemis, New Brighton, Staten Island, N. Y.

1897 *Index.*

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1898 In the Circuit Court of the United States in and for the Southern District of Iowa, Central Division. In Chancery.

THE DES MOINES GAS COMPANY, Complainant,
vs.
THE CITY OF DES MOINES, Defendant.

DES MOINES, IOWA, *September 19th,* 1911.

To Robert O. Brennan, Esq.; H. W. Byers, Esq., Solicitors for the Defendant, The City of Des Moines.

DEAR SIRS: As requested by you I have studied the testimony and exhibits of this case, and have prepared certain data and conclusions on the cost of the property, the operating expenses and other matters bearing on the reasonableness of the price of gas, Ninety Cents, as fixed by the City of Des Moines last December.

Respectfully,

EDWARD W. BEMIS.

1899 *Cost of Property to Des Moines Gas Company.*

With the exception of half a million dollars, the plant appears to have been entirely built from earnings. Passing that for the present, however, there is another way of considering the cost of the property.

On March 1, 1906, the Des Moines Gas Company assumed $400,000 of outstanding bonds of the Capital City Gas Company, and a debt to the parent company of $240,000 for property in the City of Des Moines. In addition to this, $800,000 was paid in 6% preferred stock contracts.

In other words, the property appears to have cost the Des Moines Gas Company the following amounts: This does not include the $45,000 in Valley Junction.

Bonds	$640,000.00
Preferred stock contracts	800,000.00
Total	$1,440,000.00

Little importance should probably be attached to the issuance of $2,250,000 of common stock in March, 1906. It has never paid a dividend and appears to represent no investment in the plant.

If to the above $1,440,000 of 5% and 6% securities, issued in 1906, there be added the $484,487.94 of extensions since March 1, 1906, (Defendant's Exhibit 30, page 21.) we have the total present cost of the property to the Des Moines Gas Company, of practically $1,925,000, less depreciation of say $75,000, since the purchase of the property five years ago.

1900 This net value, based on the cost less depreciation of $1,850,000, may be called the cost of the property to the present com-

pany. This figure will be henceforth referred to as the cost of the Des Moines Gas Company.

A sounder view, however, and the one more in line with Court and Commission rulings, is obtained by ignoring the changes in securities that came when the property was transferred from one subsidiary company to another, by the present parent company. We would then reach the true investment by taking the cost given below of $1,727,676, including Valley Junction, less an allowance for depreciation and with the addition of working capital.

1901 *Cost of the Plant.*

The history of the plant and its cost is naturally divided into four periods, the first preceding the year 1876; the second extending from that time until Dec. 31, 1894; the third from Jan. 1, 1895 to Feb 28, 1906; and the fourth from March 1, 1906 until Dec. 1, 1910.

Period Prior to 1876.

Respecting the first period, all I have been able to learn is from the testimony of Mr. Lewis Lillie, Accountant, at that time, for the United Gas Improvement Company, and now Fourth Vice-President and Treasurer. He testified in the case of the Capital City Gas Light Company vs. The City of Des Moines, as follows:

"Q. You have an item there, I see, old gas works. How much is that?

"A. $38,828.36.

"Q. Do you know what that item is?

"A. It represents the cost of the old Des Moines Gas Company I think the name was. It was bought at sheriff sale by this Company. It is the amount of the purchase price."

Period from 1876 to Dec. 31, 1894.

With respect to the second period, we have fairly complete information. Mr. Lillie, in this same case, testified:

"Q. Do you say that in addition to that $38,828.36 there was added during the year 1878 in gas building and machinery, $91,867.03?

"A. I do, Sir.

"Q. That was all added during the year?

1902 "A. During the time prior to that from 1878, or whenever they started, to this date. The works were being built. They commenced in 1876. This represents the amount they expended up to that time charged to this account, expended in cash. * * * the first closing of the books on January 26, 1878, and that was the time of the first statement."

He further stated that when the accounts of the Capital City Gas Light Company were thus closed for the first time. Jan 26, 1878, the cash investment was $168,792.36, and that the company, during the few months it had been operating, had failed even to cover

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operating expenses, by $508.82. The subsequent history of the plant is described in an affidavit in this same case in 1895, by Mr. Edward G. Pratt, who had been manager of the company since 1887. The important part of the affidavit was as follows:

"Deponent further says that the papers hereto attached, marked Exhibit 'C' are the exhibits referred to in the testimony of Lewis Lillie, and that they correctly show the matters and things therein embraced. That the part of said papers marked Exhibit 'D' are, a continuation of the said several exhibits, (Excepting the Profit and Loss Statements), from the 31st of December, 1891, to and including the 31st of December, 1894, and bring the history of the Gas Company in the respects shown in said Exhibits up to said last named date. That the said supplemental showing as contained in said Exhibits is true and correct to the knowledge of deponent.

"Deponent further says that the papers hereto attached, marked collectively Exhibit 'E', are the Profit and Loss statements of the complainant for the years 1892, 1893, and 1894. That they
1903 show for each of said years the total amount received by the company for gas and from all sources, and the total amount expended, and therefore the net profits for said years. That said statements are true and correct to the knowledge of this deponent.

"Deponent further says that under the circumstances and conditions existing in Des Moines economy and prudence require the manufacture and distribution of a combined water and coal gas, and this company has for many years manufactured and sold such gas. That the gas plant with all its accessories is not larger than is necessary to fairly accommodate the demands of its business, with a reasonable provision for future growth. That he attaches hereto a statement showing an inventory of the property of the Company comprising its said plant marked Exhibit 'F', and made a part hereof. That the actual cash invested by the Company in said plant was on the 31st of December, 1894, Four Hundred Sixty-six Thousand Five Hundred and Thirty-two and 93/100 Dollars ($466,532.93). That said investment has been carefully and prudently made, and in accordance with the highest requirements of the business in which the Company is engaged. That it would cost at the present time with present prices for materials to reproduce the said plant at least Four Hundred and Seventy Thousand Dollars ($470,000.00)."

1904 Mr. Pratt in his testimony referring to these exhibits was asked:

"Q. You may state whether in your opinion the amount shown by these statements to have been invested in cash in the gas company in plant, viz., $449,500.77, is a fair and reasonable presentation of the cost of the property, having reference to the time at which the investments appear to have been made, according to the books.

"A. I believe them to be so."

Mr. Lillie testified, in reply to interrogations 37-56, inclusive, in direct examination, that an electric light plant had cost, up to December 31, 1891, $65,717.21 and that gas patents had cost $172,096.94, and that the actual cash invested had been $449,500.77, up

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to December 31, 1891. Also in Exhibit "C", Statement 2, he gave the full cash investment for each year up to December 31, 1894, and the profit and loss thereon. He gave the same cash investment of $466,532.93, December 31, 1910, as did Mr. Pratt.

1905 The Ledger showed as investment in construction and working capital, December 31, 1894, of $681,646.04, but Mr Pratt, in his affidavit, gave the cash investment for both plant and working capital as $466,532.93. The balance of $215,113.11, as shown in Exhibit "C" of his affidavit was made up as follows:

Cost of stock of Capital City Electric Co., less cash dividends received	$2,553.00
Store room electricity	791.86
Advance Insurance	300.09
Stock issued without consideration, less undivided profits to Jan. 15, 1896	39,371.22
Rights under gas apparatus patents	172,096.94
Total	$215,113.11

Of this cash investment devoted to the gas business, of $466,532.93, which had never been reduced by any depreciation, charge material and supplies were $11,559.49, and cash and bills payable were $25,546.61. This left as the plant account devoted to the gas business, December 31, 1904, $429,426.83. It is probable that the nominal working capital, of materials, supplies, cash and bills payable just given, aggregating $37,106.10, should be to some extent reduced by certain other items, such as accrued interest and taxes, but for the purpose of the present computation it may be left as appears in Mr. Pratt's affidavit.

1906 Period Jan. 1, 1895-Feb. 28, 1906.

During this time the new construction was $648,760.90, as shown in Defendant's Exhibit No. 30, (Mr. Hall's). The books of the company agree with this, except that they show a writing up of the value of the property without any corresponding new construction of $131,744.44, on May 1, 1897, as explained on page 30 of Defendant's Exhibit No. 30, and in Defendant's Exhibit 35. Little if anything was written off for depreciation, save as it appeared in operating expenses under repairs and renewals.

Period March 1, 1906-Dec. 31, 1910.

During this time the books of the company in Des Moines show an expenditure of $529,487.94 for construction, including $45,000 in Valley Junction. It is the claim of the company that an additional amount of $120,000, not reported on the books of the company, was paid for the new holder of 1,132,000 ft. capacity. None of the company's witnesses in position to know about it has testified that the holder did cost this much. It would be well to see the

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vouchers covering this item. For the present, however, this $120,000 is conceded to the company.

On the other hand the other two items appearing on the books of the company as construction during this period are excluded. One of them is bond discount, $33,950.00 and the other is reorganization expenses of $6,922.82. Bond discount in the case of an old and strong company like that at Des Moines is a mere function of
1907 the rate of return on capital, and is no part of the construction costs. Reorganization expense connected with the sale of the plant by one company to another, both being entirely owned by a third company, is also not a matter of cost of construction.

1908 Summary of the Construction Costs.

Combining what has been said above and what is given in Defendant's Exhibit 30, pages 9, 18, 19, 21 and 29, it is possible to condense it into a table comprising the salient facts for the last three periods. The second period, ending with December 31, 1894, included the property bought for $38,828.36 at Sherriff's sale before 1878. Of this sum, $25,000 known in the early accounts as "old gas works" consisted, according to the testimony in 1895 of Mr. Pratt, chiefly of mains and services, but has been here included in the manufacturing plant because of the name of the account and because it has usually been so included. It makes no difference in the final analysis.

1909 *Construction from* 1876 *to December* 31, 1910.

Description.	Period from 1876 to Dec. 31, 1894.	Period from Jan. 1, 1895— Feb. 28, 1906.	Period from Mar. 1, 1906. — Dec. 31, 1910.	Total.
Street Mains	$120,512.29	$286,552.25	$242,686.12	$649,750.66
Meters	16,849.17	102,541.83	68,364.93	187,755.93
Services	35,504.82	150,796.07	72,493.28	258,794.17
Street Lamps	14,845.87	8,449.91	2,039.65	25,335.43
Land	8,916.00	25,200.00	1,649.26	35,765.26
Works	232,440.61	75,220.84	205,760.39	513,421.84
Office Furniture	358.07	.....	11,494.31	11,852.38
Valley Junction, 1906	.....	.....	45,000.00	45,000.00
Grand Total	$429,426.83	$648,760.90	649,487.94	1,727,675.67

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1910 In the absence of more definite information ot is probably not far out of the way to estimate that the $45,000 spent at Valley Junction was apportioned as follows:

Mains	$35,000.00
Meters	5,000.00
Services	5,000.00

This would raise the total investment above given, on mains, meters and services in both Des Moines and Valley Junction, to the following point:

Mains	$684,750.66
Meters	192,755.93
Services	263,794.17

If $45,000 was spent at Valley Junction about 1905 and 1906, as has been claimed, it is likely that some of the subsequent investments of the company have gone into further extensions to meet the growing business at Valley Junction. In that case, the investment in the City of Des Moines is correspondingly less than the $1,682,675.67 which it would be with the mere subtraction of the $45,000.

From the total investment of $1,727,675.67 in the plant of the company should be deducted depreciation. Appreciation possibly should be added; that would be considered later. Working capital should also be added. This was given by the company, Dec. 31, 1894, as $37,106.10. Mr. Hall *a*kes it at $50,000 from then until Jan. *i*, 1910, when he makes it $68,952.91. The company claims a working capital of $150,000. That question, together with the claims for appreciation in the matter of land, paving over street mains, overhead charges and going value will be considered later.

1911 *Depreciation.*

As has already been explained by several witnesses, it is not usual in gas companies to put into repairs and maintenances account sufficient to take care of the ultimate renewal of the larger and more valuable portions of the plant. This can only be taken care of by a special renewal or depreciation reserve fund, placed at interest in safe securities, or invested in the plant. If the latter method is adopted, care must be taken to set aside the earnings from this depreciation reserve for additions to the reserve, rather than for distribution and dividends. It is easy, for example, to find safe securities at 5%, like the bonds of the company itself, for the investment of this depreciation reserve. A 6% or possibly a higher return may be secured by the investment of this reserve in the plant itself.

When a company pays out in dividends the amount that should be set aside to meet depreciation, it is thereby withdrawing part of the capital from the business, and cannot justly claim any further return thereon.

The Des Moines Gas Company has set aside no depreciation re-

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serve. It has apparently charged into operating expenses for the last twenty-five years not only all repairs but all renewals, so far as the cost of renewal did not exceed the cost of the part renewed, less its scrap value. Various witnesses have fixed the following depreciation, however, that has not, in their opinion, been prevented by these repairs and renewals.

1912 *Accrued Depreciation.*

Authority.	Amount.	Reference.
Henry I. Lea.....	$380,009.	Lea's Exhibit, Introduction.
William A. Baehr....	310,325.	Complainant's Exhibit 21, p. 17.
William W. Randolph	282,331.	Complainant's Exhibit 22, p. 1.
William D. Marks...	364,363.	Defendant's Exhibit 23, p. 75.
James Hall.....	243,862.	Defendant's Exhibit 30, p. 18.

The problem before us is not so much the problem of depreciation as of how to finance depreciation, i. e., how much to allow the company to set aside yearly from operating expenses to finance depreciation in the way most expensive to the company and least advantageous to the consumer, viz., by a 4% sinking fund investment. This leaves the company free to secure a more profitable investment of the depreciation reserve, in either 5% securities of its own and other good companies, or in a 6% or better investment in extensions of its own plant.

Omitting real estate, working capital and going value, as not subject to depreciation, Mr. Lea estimated the cost, new, of the rest of the gas property, as $2,580,140, and the annual investment necessary to meet this in a 4% sinking fund as $37,385. This implies, according to sinking fund tables, an average life of thirty-four and one-third years, and an average payment into the sinking fund of 1.41%.

Similarly Mr. Baehr estimated the necessary sinking fund at $33,359, or 1.262% of his cost of reproduction new of the depreciable property, $2,642,467. This implies an average life of 36 1/3 years.

1913 Mr. Randolph estimated a depreciation of $282,331 on $2,520,514 of depreciable property. This implies 1.12% yearly payment to a sinking fund and an average life of nearly 39 years.

Under these circumstances no injustice is *due* to the company in assuming an average life of 36 years and consequently a yearly payment into the sinking fund of 1.289%. Indeed, I believe an average life of nearly 41 years, and a payment of 1% into a 4% sinking fund, or 38 1/3 years and a payment of 1% yearly into a 5% sinking fund, would be ample.

A further point has been conceded to the company. Owing to the difficulty of excluding the cost of the land, of over $35,000, that, too, has been included in the property on which depreciation is calculated.

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1914 *Valuation at Beginning of Each Year with One-half the Additions of the Year.*

Year.	Valuation at the beginning.	One-half of additional investment.	Average investment aside from working capital.	Depreciation at 1.289%.	Proceeds in sinking fund.
1895.....	$429,426.83	$4,451.58	$433,878.41	$5,592.69	$5,592.69
1896.....	438,329.98	21,098.71	459,428.69	5,922.04	11,738.44
1897.....	480,527.39	30,775.19	511,302.58	6,590.70	18,798.68
1898.....	542,077.76	15,279.65	557,357.41	7,184.33	26,734.96
1899.....	572,637.05	22,983.76	573,620.81	7,677.55	35,481.91
1900.....	618,604.56	17,161.64	635,766.20	8,195.02	45,096.21
1901.....	652,927.83	55,387.59	708,315.42	9,130.18	56,030.24
1902.....	763,703.00	27,819.07	791,522.07	10,202.72	68,474.17
1903.....	819,341.14	43,235.33	862,576.47	11,118.60	82,331.74
1904.....	905,811.80	22,966.02	928,777.82	11,971.95	97,596.96
1905.....	951,743.84	57,783.22	1,009,527.06	13,012.80	114,513.64
Jan. 1–Feb. 28, 1906.....	1,067,310.27	5,438.73	1,072,749.00	2,364.62	117,641.69
March 1, 1906.....	71,078,187.73	149,457.14	1,227,644.87	13,186.95	135,534.31
1907.....	81,377,102.01	46,857.92	1,423,959.93	18,354.84	159,310.52
1908.....	91,470,817.82	20,909.00	1,491,726.82	19,228.36	184,911.30
Mar. 1–Dec. 31, 1909.....	1,512,635.82	47,059.49	1,559,695.31	20,104.47	211,179.48
1910.....	1,606,754.80	60,460.44	1,667,215.24	21,490.40	241,117.06

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1915 It appears that the amounts thus set aside, aggregating $191,328.22, will amount at 4% at the close of 1910 to $241,117. The amount thus set aside in 1910, $21,490, is equivalent to 4¢ per 1,000 ft. of sales that year. It would be entirely proper to reckon the sinking fund at 5%, since the company could invest the depreciation reserve in its own 5% bonds or other equally good 5% securities selling at or about par. But the very conservative figure of 4% is here used.

The claim was made by Mr. Hagenah that it was impracticable to reckon interest on this depreciation reserve because it was liable to be drawn upon at any time for renewals. The answers to that are, first that in case of the Des Moines Company not a cent of this fund has been called for up to date,—in fact, it has not even been set aside,—and second, that if the life of each part of a gas plant is properly determined, all withdrawals before the end of the average life will be counterbalanced by the deferring of many withdrawals to much after the expiration of the average life.

The amount of depreciation arrived at by the above computation is nearly the same as that of Mr. Hall. It is smaller than that of the Company's witnesses, but their depreciation was based on an assumed value of the plant when new of nearly twice what the books of the company show was the actual cost, or what, outside of paving, would be the cost today. Making this allowance, the depreciation estimates of Messrs. Lea, Baehr and Randolph would not exceed the figure of $241,117, here taken. Prof. Marks obtained his high depreciation by giving the company the benefit of interest on
1916 the depreciation reserve, as pointed out by Mr. Guernsey in his cross-examination.

The following table gives the investment at the end of each year, as found by Mr. Hall; the proceeds of the investment yearly of 1.289% of this in a 4% sinking fund; and the investment less this accumulation in the sinking fund:

1917 *Net Investment at End of Each Year.*

Date.	Investment.	Proceeds of sinking fund.	Investment less depreciation.
Dec. 31, 1894.	$429,426.83	.....	$429,426.83
Dec. 31, 1895.	438,329.98	$5,592.69	422,737.29
Dec. 31, 1896.	480,527.39	11,738.44	468,788.95
Dec. 31, 1897.	542,077.76	18,798.65	523,279.11
Dec. 31, 1898.	572,637.05	26,734.96	545,902.09
Dec. 31, 1899.	618,604.56	35,481.91	583,122.65
Dec. 31, 1900.	652,927.83	45,096.21	607,831.62
Dec. 31, 1901.	763,703.00	56,030.24	707,672.76
Dec. 31, 1902.	819,341.14	68,474.17	750,866.97
Dec. 31, 1903.	905,811.80	82,331.74	823,480.06
Dec. 31, 1904.	951,743.84	97,596.96	854,146.88
Dec. 31, 1905.	1,067,310.27	114,513.64	952,796.63
Jan. 1–Feb. 28, 1906.	1,078,187.73	117,641.69	960,546.04
Mar. 1, 1907.	1,377,102.01	135,534.31	1,241,567.70
Mar. 1, 1908.	1,470,817.82	159,310.52	1,311,507.30
Mar. 1, 1909.	1,512,635.82	184,911.30	1,327,724.52
Mar. 1–Dec. 31, 1909.	1,606,754.80	211,179.48	1,395,575.32
1910.	1,727,657.67	241,117.06	1,486,558.61

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1918 *Working Capital.*

In a decision last year with respect to rates of charges for gas and electric light by the company, at Madison, Wisconsin, the Wisconsin Railroad Commission ruled that a reasonable working capital was only $45,000 to $50,000, or less than 15% of the $339,000 of gross income of that company.

Applying this percentage to the gross income of the Des Moines company in 1910 of about $538,983, this would give a figure of about $80,000 for Des Moines. The Wisconsin commission held:

"Coal can be contracted for in large quantities and paid for as delivered on terms that are about as favorable as any that can be had. In fact, such transactions are usually reported in about the same light as ordinary cash deals. Other supplies can probably be bought on thirty days on practically a cash basis. Wages and salaries are ordinarily paid monthly and about the time the bills for gas are current sold are collected, or can be so paid. Taxes, interest, and profits are not likely to be paid oftener than in one or two annual installments. The receipts taken as a whole, are about one-third greater than that part of the expenses which, when considered together, it would be of any advantage to the plants to pay as often as once a month." (Madison Gas and Electric Light Decision, Page 553.)

I do not see why the working capital should exceed two months expenses. Receipts come in all through the month. There are comparatively few bad debts or uncollectible bills and as stated in
1919 the Wisconsin decision, the supplies, while contracted for in large quantities, need be paid for, in fact are not paid for, but once a month on the deliveries of the previous month.

Now two-twelfths, or one-sixth of the operating expenses of the Des Moines Gas Company would be less than $60,000. I see no reason, therefore, to dissent from the view of Mr. Hall as to $68,952.91, or 13% per 1,000 ft. of sales. It is practically the same as the working capital per 1,000 ft. of sales allowed in the Consolidated Gas Company of New York. Since, however, this is a much smaller company, and further from the big markets than New York, I have conceded the amount granted by the Wisconsin commission of a trifle under 15% of the gross income, or $80,000. The Company claimed a working capital, Dec. 31, 1894, of $37,106.10. To reach the figure of $80,000 in 16 years would require substantially $2,700 a year, with the exception of the last year. That figure will be used, therefore, bringing the real working capital as a result of $2,700 yearly addition, to $80,306.10, in the following table:

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1920 *Net Investment with Working Capital.*

Date.	Net investment including allowance for depreciation.	Working capital.	Net investment with working capital.
Dec. 31, 1894	$429,427	$37,106.	$466,523.
Dec. 31, 1895	432,427	39,806.	472,233.
Dec. 31, 1896	468,789.	42,506.	511,295.
Dec. 31, 1897	523,279.	45,206.	568,485.
Dec. 31, 1908	[5*]545,902.	47,906.	593,808.
Dec. 31, 1899	583,123.	50,606.	633,729.
Dec. 31, 1900	607,832.	53,306.	661,138.
Dec. 31, 1901	707,673.	56,006.	763,67[0]*
Dec. 31, 1902	750,867.	58,706.	809,573.
Dec. 31, 1903	823,480.	61,406.	884,886.
Dec. 31, 1904	854,147.	64,106.	918,253.
Dec. 31, 1905	952,797.	66,806.	1,019,603.
Feb. 28, 1906	960,546.	67,256.	1,027,802.
Feb. 28, 1907	1,241,568.	69,956.	1,311,524.
Feb. 28, 1908	1,311,507.	72,656.	1,384,163.
Feb. 28, 1909	1,327,725.	75,356.	1,403,081.
Dec. 31, 1909	1,395,575.	77,606.	1,473,181.
Dec. 31, 1910	1,486,559.	80,306.	1,566,865.

1921 *Overhead Charges.*

The Company claims that the books show only what was actually charged to construction, and that the overhead expenses for interest and taxes during construction engineering and superintendence, legal work, casualty insurance, omissions and contingencies in all this construction were entirely charged into operating expenses, although properly charged into construction.

Mr. Lea thus charged into overhead $567,780, and Mr. Baehr $615,603. Deducting from these items the overhead applicable to paving, which will be separately considered, the overhead remaining on the property now, and on the depreciated property, according to these witnesses, I have computed as follows:

Overhead on new paving, according to Mr. Lea	$111,888
" " " " " " Mr. Baehr	112,669
Overhead on rest of property, new, acc. to Lea	455,892
" " " " " " " " Baehr	502,934
Depreciation of all property, acc. to Lea	14.73%
" " " " " " Baehr	11.75%
Overhead thus depreciated, acc. to Lea	387,739
" " " " " Baehr	4[3]*,839

[*Erased by pencil.]

It may be remarked that the overhead on paving by each of the above witnesses was found by taking for overhead the same percent, of their total allowance for paving new as they allowed for overhead in the entire distribution system. This was 26.66% in the case of Lea and 28.65% in the case of Baehr.

1922 Put in another way, Mr. Lea raises the cost of the physical property aside from land about 28%, and Mr. Baehr about 30% for overhead charges. This ignores the fact that the Chicago Traction ordinances only allow 16% of overhead and the Wisconsin Railroad Commission 12%, in all their appraisals for rate making purposes. The Wisconsin Commission made careful investigation of the subject in connection with their decision on the Madison Gas & Electric Light Company, in 1910, and the Racine Gas Light Company, in 1911, both companies being two-thirds the size of the Des Moines company.

Still more remarkable are the consequences that must logically follow any concession to the company of any increase of book or investment cost of its property by virtue of an allowance for these overhead charges. The first result would be that the consumer having already once paid for this $400,000 or $500,000 of overhead charges through operating expenses which have appeared in the price of gas, is now asked to pay interest on the same amount, from time to time. An even more important and significant result must also follow any allowance for overhead charges. If they have been included in operating expenses as witnesses for the Company have testified, then the operating expenses for the last five years must be rewritten on the books of the company, so as to take out the overhead charges applicable to construction. For example, in the last five years, March 31, 1906 to December 31, 1910, $650,000, in round numbers (Defendant's Exhibit 30, page 21) has gone into the plant. An additional 29% of this for overhead charges is the average

1923 amount allowed by Lea and Baehr, would mean $188,000. This divided over the 2,232,975,000 ft. of gas sold means over 8¢ per 1,000 ft. The public would lose nothing by conceding to the company the extravagant overhead charges asked for, provided 8c. per 1,000 ft. were deducted from the operating expenses to cover charges that belong to the construction account, if the company's claim is sound. At least a large portion of the 8c. would have to be deducted.

It is far more just to all concerned and far more in accordance with sound theory, to accept book records of the cost, save where it can be affirmatively shown by the Complainants that the records do not present the original cost, or present value.

1924

Discount on Bonds.

In a city the size of Des Moines today, there is no discount on gas bonds that would not be covered by 5½% interest, either in the form of direct interest or of 5% interest and a small amount set aside yearly to redeem the 5% or 10% discount and brokerage charge that might be paid in floating a 5% bond.

The whole question of discount in a company situated like the

Des Moines Company, is not a question of the cost of the property, but of the rate of return necessary to keep the securities at par or to ultimately cancel or amortize the discount by a small sinking fund.

Fortunately this issue is not an important one in the Des Moines Company, since the books show a total bond discount of only $33,950. The matter only becomes important in connection with theories of the cost of duplication. The rate of return necessary to meet such small discount (5%) as has attended the sale of 5% Des Moines Gas bonds the past two years will be considered later.

1925 *The Rise in the Value of Land.*

The testimony taken in 1895 and now, indicates that the land used by the company at its works cost only $35,765, as stated by Mr. Hagenah, and was valued at the beginning of 1911 at about $200,000 by the Company and from $85,000 to $100,000 by witnesses for the city.

During this time, in which the land has risen fully $50,000 in value, the company has sold 4,512,292,000 ft. of gas. The increase has been therefore at least 1.12¢ per 1000 ft. of sales. This rise in land value is likely to continue. If in fixing the reasonable price for gas at present there is added to the cost of land $60,000 or more to cover its increase in value, then we must recognize that an equal credit is likely to come to the company yearly, as an additional profit on its investment.

When another period of fixing rates arrives, the court presumably will concede to the company another increase in the value of the land, as a basis for rate making. If, however, the Court shall assume that the Company is not entitled to capitalize the increase in value of its land until it sells the same, there would be no increase in the capitalization and no occasion for adding this credit to the revenues from gas.

This view of adding to the revenue of the property the credit from the yearly increase in value of the land has just been taken in an important decision (Queensborough Gas & Electric Company, decided June 23, 1911).

1926 *Paving.*

In the valuation of the distribution system the following amounts were allowed for paving, by the company's witnesses:

Paving, New and Depreciated.

Witnesses.	New.	Present value.
Henry I. Lea	$419,685	$370,598
William H. Baehr	393,261	344,890

The above value of new paving is taken directly from the exhibits of the witnesses mentioned. They apparently did not give the present value of the paving separately from the present value of the entire street mains and services, but testified that they reck-

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oned the same depreciation on the pavement as on the mains and services. It is therefore a simply matter to apply the same percentage to the paving that these witnesses applied to the entire mains and services including paving, as follows:

Mains and Services, New and Depreciated.

Witnesses.	New.	Present value.	Per cent depreciation.
Henry I. Lea	$1,963,027	$1,732,963	11.72%
William H. Baehr.....	1,993,243	1,746,924	12.30%

It is by applying the percentage just found to the paving value when new that the present value of paving is determined as above, for each witness.

The city's witnesses assume that the mains and services, in almost every case, were laid before paving, and in the few cases where they were not, the books of the company will show the cost, what ever it was. Where the main has been relaid, or repaired, after
1927 paving was laid, the cost has been properly charged to repairs and paid for through operating expenses, and is no part of the construction account.

The question at issue is whether that which cost the company nothing and is not owned by it, should be included in the capital account. It is different from the case of land, for society recognizes private ownership of land and its increase of value by individuals or corporations. There is no such recognition of private ownership of pavement over the street mains. Indeed, the company does not claim to own it,—it does not pay the cost of its laying, nor keep it in repair, nor sprinkle nor clean it nor keep it free from snow, nor return it for taxation, nor assert any control over it.

The claim of the company amounts to this: If its mains are laid, in a city like Des Moines before paving, and the city in a year or two should lay $300,000 of paving over its mains, the company would at once assert its right to increase the price of gas by 6% or more on this amount, or say $18,000 a year. This would be about 3½¢ on the present sales. It is not conceivable that under a proper system of public regulation any such increase of rates would be allowed. To grant it would be to assume that the salaries and the rate of return on the investment were not sufficient to cover such reward as similar ability and capital would obtain with similar slight risk in competitive business.

But if it be correct that the market quotation show that 5% gas bonds and 6% gas stock can be sold on an average on a 6%
1928 basis, or upon whatever basis is adopted as a fair return on capital, then, to allow a further profit from the paving would be a simple gift to the Company.

If, however, the courts shall grant the paving claims and increase the capital by say $300,000, certain interesting results will follow:

1. In the first place, dividing this $300,000 of absolutely unearned gain by the sales of gas since June 30, 1885, of 4,512,292,000 ft.,

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there would be an increase to the stockholders of 6.65¢ per 1000 ft. of sales.

2. In the second place, an equally important result follows:—the value of the paving is likely to continue to increase from further paving of unpaved streets and from the improved and more costly character of paving placed upon the older streets, and with the increase of traffic and the growing wealth of the community. The courts should then allow a further credit to the revenue of the company from this source in the future, of say 6¢ per 1000 ft., in fixing the price of gas. With a nominal price of 90¢ there would be an ultimate revenue to the company of say 96¢ from sales of gas and from the increased value of the paving, and another 1¢ from the increased value of the land, or about 97¢ in all.

The company will hardly care to capitalize the paving when it is seen that these results will logically follow. It is both simpler and fairer not to allow a company to capitalize the paving at all as a basis of rate making. It is at best only an insurance against competition, which is made more difficult by paving.

1929 Paving is not allowed by any of the public service commissions, even in New York State, where the reference to the subject in the United States Supreme Court decision in the Consolidated Gas case is not considered at all clear or decisive. The Supreme Court of Iowa has rejected the paving claim in the Cedar Rapids gas case.

Even if the courts had declared, as they have not, that only the cost of duplication can be considered, it is a question of whether the Court would not consider as duplication the laying of mains of equal capacity between the sidewalk and the curb, and in alleys, or wherever they could be laid to avoid paving, as would probably be done by a competing company coming into the city at this time.

1930 *Going Value.*

The witnesses of the company have given the following estimates of the going value:

Henry I. Lea	$583,000.00
William A. Baehr	509,000.00
William W. Randolph	500,000.00
William J. Hagenah	530,000.00

The first two of the above witnesses reach the result by attempting to capitalize the cost of acquiring the business today. The more valuable the business, that is, the greater the profits—the larger the going value. Mr. Hagenah approaches the subject from directly the opposite point of view, and attempts to capitalize deficits in earnings below 8% during the history of the company. With his theory, therefore, the less profits the greater the going value. Thus going value is obtained, either going or coming. Mr. Randolph ignores both profits and losses, and bases his theory on expenditures per consumer that had been spent under the guise of "new busi-

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ness" for promotion purposes during the past year, after deducting a certain number of consumers that might have come to the company anyway. He then applies this unit to the entire number of meters in use.

With these witnesses, going value represents the difference between what the present company would earn and what a new company would earn that has just started to build. The present worth of the difference in the earnings during the seven years is the so-called "going value." At the start, three things should be noticed:

1931 1. It is more or less reasoning in a circle. The larger the profits of the existing company, the greater the margin during the seven years between those profits and that of the new, growing company, and therefore the higher the price which would thereby be justified, and the higher the price, within certain reasonable limits, the higher the profits. The very question at issue however, is the reasonableness of the price and the profits today. The theory assumes the present price, whether just or not, in order to establish a value on which the justice of the present price is to be determined.

2. Even if the present company was earning only 1% on its investment, and if its securities without water would only sell at 20¢ on the dollar, there would be, nevertheless, a margin on this theory between the profits of the present and hypothetical companies, and therefore a going value, to be paid for in addition to the physical value,—a somewhat absurd conclusion.

3. The magical character of the sacred number Seven, of the old Hebrew, Egyptian and Chaldean religions appear- to influence Mr. Lea and Mr. Baehr. The former assumes that in the hypothetical city there are no fixtures and other gas appliances and that the people have only a theoretical knowledge of gas. The latter assumes that the fixtures are all in place and that the people know as much about the use of gas as in Des Moines today, but that they have become temporarily weened away, to some extent, from its use because obliged to use coal, oil, electricity, etc., during the two or three years while the comparative plant is being built. To induce a city to use gas under the conditions assumed by Mr. Baehr would naturally take less time than under the conditions assumed by Mr. Lea; but the sacred number—seven years—is still used.

1932 Coming now to the fundamental proposition involved, it may be at once admitted that there is a value in established connections with the consumers. The point is, whether a gas company, under conditions practically a regulated monopoly, is entitled to capitalize it in the fixing of rates. A franchise, in a similar way, in a sale to another company has a value even though it does not guarantee a definite price, but it cannot be capitalized against the public in a rate case. A gas company is entitled to no more than similar capital, brains, and small amount of risk would obtain in a competitive business,—if we could imagine a competitive business where depreciation and all hazards are practically insured against out of earnings, which courts and commissions persist.

Having fixed a rate of return fair to the investor under such con-

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ditions as prevail in the gas business, we would be giving him a better protection than if he were in private business if we allow him a return on going value which either cost the gas company nothing or had been paid for by the consumer in operating expenses.

Any industry that has been established as long as has the gas business is not allowed, in the competitive world, to capitalize consumers' habits or education or possession of fixtures for the use of the commodity. Competition prevents that. Only the actual physical investment and the brains of the management count, in a business where good will is as much eliminated as in the gas business.

So far as I am aware, going value has not been allowed in any rate case except in Oklahoma and this month to a small extent in the Des Moines water case, although it has been directly and ably presented in many courts. Further, neither of the four 1933 great rate making commissions, of Massachusetts, the First and Second Districts of New York, and Wisconsin, have allowed it, except in the case of early losses in some Wisconsin Companies.

Judge Robert W. Taylor, of the United States District Court, refused to allow it in the most important appraisal that has been made, that of the street railways of Cleveland, Ohio. The latest decisions on the subject, those of the Public Service Commission, First District of New York, rendered June 23 and August 18 of this year, in the case of the Queens Borough Gas & Electric Company, the Brooklyn Borough Gas Company, and the Kings County Lighting Company, refused to allow it.

Mr. Randolph capitalizes the number of consumers at $20. to $30 per head. Since the company has already charged into operating expenses the development cost of getting the consumers, this theory amounts to holding that the consumer having once paid to get himself enrolled as a consumer on the books of the company, must forever after pay interest on himself to the company.

Mr. Hagenah has fixed upon 8% as the proper return for the Des Moines Gas Company, throughout its history, and where he finds by his mistaken method of treating depreciation, that the earnings are less than 8%, he not only capitalizes them, but computes interest on these so-called losses, at 8%. In other words, he makes, not only of the stock but of the entire investment of the property, a cumulative 8% interest bearing investment. There is no such gilt-edged security as that on the stock market. If there were, it would probably be worth 200.

Where a company, with the exercise of reasonable ability, has been unable to make a fair profit in its early years, the best 1934 treatment of the matter is that practiced for many years by the Massachusetts Gas and Electric Light Commission, the parent of our state systems of regulations of municipal monopolies. The Massachusetts Commission allows such a company to earn somewhat more than the ordinary rate of profit to make up for early losses, but does not dream of permitting these losses to be

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capitalized, or for capital to be issued to cover such losses. The Massachusetts method has just been endorsed by the New York Public Service Commission for the First District.

If we are to take the position that any failure to make some agreed-upon rate of profit is to be capitalized, then we must maintain that all profit above that agreed-upon percentage must be deducted from the capital, even to the extent, if the profits warrant, of wiping out the entire physical investment. Such a position the courts have never taken. From the history of the Haverhill, Mass., gas case, there is much doubt whether the courts ever will take such a position.

1935 *Profits*—1878 *to* 1910.

While not accepting the theory of capitalizing early losses, it is interesting to observe how large the profits in the aggregate have been, even with the inclusion of some years of small returns.

In the following table will be given the gross revenue and operating expenses as found by Mr. Hall (Defendant's Exhibit 30, page 29) save that his 6c. per 1000 ft. allowance for depreciation will not be included in the operating expenses, and the rate litigation expenses of $9,305, in 1895, and the $3,689 of accident expenses paid in January 1906, will be included.

With these changes the operating expenses will be practically the same as given by Mr. Hagenah, after omitting interest payments while there is very little difference in the gross revenue between Mr. Hall and Mr. Hagenah.

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Gross and Net Revenue Without Allowance for Depreciation.

Date.	Gross revenue.	Operating expenses.	Income.	Addition to sinking fund.	Net income.
1895	$95,414	$64,702	$30,712	$5,592.69	$25,119.31
1896	99,921	69,762	30,159	5,922.05	24,236.96
1897	109,901	73,591	36,310	6,590.70	29,719.30
1898	118,117	76,728	41,389	7,184.33	34,204.67
1899	138,521	101,250	37,271	7,677.55	29,593.45
1900	173,158	116,465	56,693	8,195.02	48,497.98
1901	197,623	133,788	63,835	9,130.18	54,704.82
1902	242,610	168,583	74,027	10,202.72	63,824.28
1903	289,486	200,549	88,937	11,118.60	77,818.40
1904	337,205	205,401	131,804	11,971.95	119,832.05
1905	369,375	221,784	147,591	13,012.80	134,578.20
Jan. 1–Feb. 28, 1906	59,159	43,326	15,833	2,364.62	13,468.38
March 1, 1906–7	390,833	252,218	138,615	13,186.95	125,428.05
1907–8	446,510	280,548	165,962	18,354.84	147,607.16
1908–9	471,734	278,333	193,401	19,228.36	174,172.64
March 1–Dec. 31, 1909	409,240	254,324	154,916	20,104.47	134,811.53
1910	538,893	346,785	192,108	21,490.40	170,618.40

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1937 The early history of the Capital City Gas Light Company is thus given in Mr. Pratt's Affidavit of the June 7, 1895. The total- are mine:

1938

Date	Cash Invested.	Profit or Loss.		Percent Profit.	
Jan. 26, 1878....	$168,792.36	$(508.82)	loss.	(0.30)	loss.
Jan. 15, 1879....	176,507.93	9,295.87		5.26	
Jan. 15, 1880....	183,786.23	14,127.97		7.68	
Jan. 15, 1881....	198,193.37	20,366.64		10.25	
Jan. 15, 1882....	187,652.68	15,185.14		8.09	
Jan. 15, 1883....	237,909.61	26,346.26		11.07	
Jan. 15, 1884....	263,939.08	23,211.17		8.71	
Jan. 15, 1885....	274,161.32	21,526.33		7.85	
Jan. 15, 1886....	273,854.61	21,197.79		7.74	
June 30, 1887....	281,512.27	32,664.10	1½ yrs.	7.74	
June 30, 1888....	322,426.05	28,272.08		8.77	
June 30, 1889....	332,934.33	21,959.73		6.16	
Dec. 31, 1889....	346,846.91	12,650.83	½ yr.	7.29	
Dec. 31, 1890....	373,163.81	25,849.91		6.91	
Dec. 31, 1891....	449,500.77	24,053.62		5.35	
Dec. 31, 1892....	453,658.35	20,801.71		4.59	
Dec. 31, 1893....	460,582.16	18,320.14		3.98	
Dec. 31, 1894....	466,532.93	36,119.93		7.74	
	$4,541,954.77	$371,450.40		6.81	

1939 The subsequent history of the earnings are given below, based on the tables above. Owing to the difficulty of separating the investment at the close of each year, after deducting the proceeds in the sinking fund and including working capital, the investment at the close is taken from the average investment of the year. In this way the earnings are made to bear a slightly lower percentage of the investment than they should.

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Date.	Investment with working capital and after deducting depreciation.	Net income.	Per cent.
1895 ...	$472,233	$25,199.31	5.32
1896 ...	511,295	24,236.96	4.74
1897 ...	568,485	29,719.30	5.23
1898 ...	593,808	34,204.67	5.76
1899 ...	633,729	29,593.43	4.67
1900 ...	661,138	48,497.98	7.64
1901 ...	763,679	54,704.82	7.16
1902 ...	809,573	63,824.28	7.88
1903 ...	884,886	77,818.40	8.79
1904 ...	918,253	119,832.05	13.04
1905 ...	1,019,603	134,578.20	13.20
	7,836,682	642,129.40	8.194
Jan. 1-Feb. 28, 1906 ...	1,027,802	3† 1[2]*,468.38	7.862
	8,007,983‡	655,597.78	8.187
March 1, 1906–7...	1,311,524	125,428.05	9.56
1907–8...	1,384,163	147,607.16	10.66
1908–9...	1,403,081	174,172.64	12.41
March 1 to Dec. 31, 1909 ...	1,473,181‖	134,811.57	10.98
1910 ...	1,566,865	170,618.40	10.89
	6,893,284	752,636.98	10.92

[*Figure in brackets erased in copy.]

[†In pencil in copy.]

‡In this computation the two months investment Jan. 1-Feb. 28 1906 is taken as equivalent to 1/6 of the investment, or $171,301 for a full year.

‖In the total for the four years and ten months Mar. 1, 1906-Dec. 31, 1910, this is taken as equivalent to $1,227,651 for a full year.

1941

Dates.	Sum of investments.	Sum of profits.	Per cent.
1878–1894..	$4,541,955	$371,450	6.81
1895-Feb. 28, 1906..	8,007,983	655,598	8.19
Mar. 1, 1906-Dec. 31, 1910..	6,893,284	795,618	10.92
Totals and Average....	$19,443,222	$1,774,685	9.15

This table concedes to the company the full investment claimed by Mr. Pratt in 1895, and only deducts such depreciation after that as is taken out of operating expenses and placed in a 40% sinking fund. It shows that the true profit before 1895 averaged 6.81%. During the second period ending with February 28, 1906, it was

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8.19% and during the last four years and ten months it has been 10.92%, or an average of 9.15% throughout the thirty-four years.

It will be easy to show that the Capital City Gas Light Company never paid any dividends of consequence, and the Des Moines Gas Company has paid none in its brief history. Nevertheless, the $800,000 of preferred stock contracts bearing 5% interest, issued in 1906, and the accumulated surplus today of over $300,000 (given by Mr. Hall at $429,036.91 before charging depreciation since February 1906: Defendant's Exhibit 30, pages 27-8) has been the equivalent of good dividends on the property from the start, so far as not paid for by outstanding bonds. On March 1, 1906, these outstanding bonds amounted to $685,000. bearing 5% interest,
and the preferred stock contract at 6% amounted to $800-
1942 000 more, or a total of $1,485,000 of interest-bearing securities, on a net investment at that time of only $1,027,802.

1943 *Cost of Reconstruction.*

The books show the entire cost of the work, i. e., of the buildings, from them can be found the unit costs of construction of the distribution system, which is about two-thirds of the value of the entire plant. If the cost as shown on the books did not include a sufficient allowance for overhead, then by the same amount, as elsewhere observed, must the operating expenses be reduced during the past five years; so the matter is as broad as it is long.

The books show the entire cost of the work, i. e., of the buildings, machinery, holders and office furniture, as $525,274 (Defendant's Exhibit 30, page 21). This is without any allowance for depreciation.

Mr. Baehr estimates the cost new without overhead as $504,891, or less than $20,000, or 4% less than the original cost of the property. Some of it, however, has been scrapped, such as the first holder, a water gas set, coal gas works, etc.

The books show a cost for meters of $187,755.93, while as Baehr estimates it, their cost without overhead charges is $206,472, or about 21% more. On the two items of works and meters, combined, the books show a cost of $713,030, while Mr. Baehr's figure for the cost of reproduction without overhead was $711,363. The difference of only $1,700, or less than one-fourth of one per cent is remarkable. It confirms the accuracy of the books and records and greatly tends to establish the fact that the overhead charge has been much exaggerated by the company's witnesses. It also confirms the position taken by the Wisconsin commission that 12% is ample
for overhead charges. The contention is also almost proven
1944 that overhead can only be allowed in the present case by assuming that it has hitherto been charged in operating expenses, and must be taken out of the latter in order to determine the operating cost of gas.

Turning next to house and street lamp services, Mr. Hall has shown from the books of the company (Defendants' Exhibit 30, page 21) that the cost was only $284,129.60 Mr. Baehr gives the

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cost new with paving as $375,453 (Complainant's Exhibit 21, page 63). Deducting, however, his estimate for paving of $42,322, there remains for the services, independent of paving, $333,131. His paving was 11.272% of his total reproduction new value. Deducting this from his total overhead on services and paving of $83,433, there remains as the overhead properly apportioned to services independent of paving, $74,028.42. The services then, without either overhead or paving, are estimated by Mr. Baehr at $259,102.57, or $25,000, or 9% less than the books show to have been the cost new. This may indicate the discontinuance of some services to street lamps and elsewhere, or it may indicate that a very small portion of the services were laid under pavement originally. In any event the matter is too small to call for further consideration.

The subject may be approached, however, in a different way. Mr. Lea, in his Exhibit, page 11, gave the investment of the last five years at a figure which is 28.263% of the total investment. The books show the cost of new services the past five years, Jan. 1, 1906 to Dec. 31, 1910, to have been $74,263.59. If this was 28.262% of the total investment, it would establish a cost on the basis of the last five years' construction of $262,758.15 or only $3,000 more than Mr. Baehr's estimate of overhead, and $22,000 less than the total book cost.

1945 Professor Marks, from an entirely independent investigation, reached the conclusion (Defendant's Exhibit 23, page 75) that the structural cost new of buildings and contents, yard structures and fixtures, in fact of the works, was $482,639, or about 12% less than the books show to have been the cost of all that property viz., $525,274. If, however, the tools and stable equipment of $15,192 should be added as probably they should be, to Professor Marks' computation, the difference is only about $28,000, or about 5½%. Moreover, some of the property originally in the works, and included in the book cost, has entirely disappeared, such as the first holder.

Mr. Marks estimated the meters new at $220,000, or $33,000 more than the book cost, while his house and street lamp services he estimated at about $293,000, or $59,000 more than the books show. Combining the two items of meters and services, Professor Marks estimated the structural cost of both as $513,672, while the books show a cost of $471,885.63.

There is a remarkable agreement between Professor Marks' estimate of structural cost, Mr. Baehr's without his overhead allowance, and the book records shown by Mr. Hall.

In the case of street mains, Professor Marks allowed $652,947 (Defendant's Exhibit 23, page 75). Mr. Hall finds a book cost of $649,750. Mr. Baehr's estimate of $1,346,823 is reduced to $774,577.78 if we deduct his paving allowance of $350,939 and his overhead on the mains alone, of $221,306.22.

If, however, we take the unit costs of 4″ and larger sizes of pipe the last five years, as appears on the books (Defendant's Ex-
1946 hibit 30, Schedule 5) but in the case 3″ and smaller pipe where the records are defective we use Mr. Baehr's estimate

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of $26,001 without overhead and paving, we reach a figure of $654,150.63 as applied to the services given in Mr. Lea's exhibit. The amounts of pipe of each size used by Mr. Lea and Mr. Baehr are practically identical, but Mr. Lea's happens to be before me at the time of computation.

This total, $654,150.65, representing duplication costs on the basis of the last five years' prices, is wonderfully close to the $649,750.66 shown by Mr. Hall to have been the total cost of the mains.

Approaching the matter, then, from the standpoint of duplication on existing prices, as well as from the books, we find remarkably close agreement with Professor Marks, and also, except in the case of street mains, with Mr. Baehr, if we omit Mr. Baehr's exaggerated allowance for overhead and his paving, which was never paid for by the company.

It is fair to use the unit cost of mains, meters and services for the company's experience of the last five years, because in that time about one-third of the distribution system has been constructed.

1947 *Investment vs. Duplication.*

The following table constitutes a comparison between the showing of the company's books as presented by Mr. Hall, the appraisal of Professor Marks, the appraisal of Mr. Baehr omitting paving and overhead charges, and finally, the cost of duplication, based on the cost of construction of the last five years.

Construction and Reconstruction Costs.

Description.	Books of the company.	Marks' appraisal new.	Baehr's appraisal new, omitting land, paving & overhead.	Duplication on basis of last five years' cost.
Meters	$187,756	$220,298	$206,472	$206,997
Services	284,130	293,374	259,103	262,758
Mains	649,751	652,947	774,578	654,151
Total ...	$1,121,637	$1,166,619	$1,240,153	$1,123,906
Works & Office.	525,274	497,831	504,891	
Grand Total ...	$1,646,911	$1,664,450	$1,745,044	

This table shows a striking equality between the totals of the first three items for the various columns. In other words there is not $2,000 difference between the book cost and the cost of duplication based on the last five years of unit prices. Professor Marks is only $45,000 above the book cost, and Mr. Baehr's base figure, omitting paving and overhead, which cost the company nothing, or was charged into operating expenses, was only $120,000 or 11% above the book cost.

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The last line of the table gives the grand total of cost, except for the last column. It was impracticable to work out a duplication cost for the works from recent construction. In this grand
1948 total there is again a remarkable uniformity between the figures from the books, the appraisal of Professor Marks, and Mr. Baehr's base figures. I was present when Professor Marks produced his totals, given on page 75 of his Exhibit, and for the first time learned from Mr. Sangster what the books showed in the totals; while Professor Marks did not know, up to the time of his testimony, and probably does not even now known, any of the details of the book costs save those that appear in his report.

The way the last column of duplication costs was figured, may be here stated.

With respect to meters, the number of each size in Mr. Lea's Exhibit is almost the same as that used by Mr. Baehr. The number of meters given by Mr. Hall was not employed, because they included 649 gas meters more than in Mr. Lea's list, evidently including Valley Junction. This was part of the property included in the $45,000 not embraced in this appraisal. The unit cost- of meters employed are those not given in Defendant'- Exhibit 30, Schedule 5, page 3, except 66 meters of certain sizes where the unit costs were not given and where instead Mr. Baehr's base figure was used. There was then added 45¢ for freight, $1.50 for setting, and 15¢ for locks upon pre-payment and standard meters. The unit cost, then, of each size of meter includes $1.95 for freight and setting, and in the case of pre-payment meters, 15¢ for locks.

Of these 20,748 meters, 853 are in stock, but the same cost of setting has been applied to them as to the others. This, of course, gives a value about $1,300 too large.

1949 *Cost of Duplicating Meters.*

Description.	Number.	Unit cost.	Total cost.
3-Light	1,093	$6.95	$7,596.35
5-Light	7,526	7.80	58,702.80
10-Light	1,166	10.50	12,243.00
20-Light	120	12.20	1,464.00
30-Light	76	18.05	1,371.80
45-Light	26	22.35	581.10
60-Light	12	48.45	581.40
80-Light	1	54.00	54.00
100-Light	3	66.00	198.00
150-Light	1	95.00	95.00
200-Light	1	125.00	125.00
5-Light Prepay.....	10,397	11.40	118,525.80
10-Light "	266	13.75	3,657.50
10-A	52	13.90	722.80
30-A	6	20.30	121.80
60-A	1	57.10	57.10
2000-C. I.	1	900.00	900.00
Total	20,748		$206,997.45

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1950 *Services.*

The only way the data at hand can be used for estimating the cost of duplicating the services on the basis of the cost of the last five years, was to compute from Mr. Lea's Report, page 11, that 28.263% of the cost of the services has been spent in the last five years. During that time, Mr. Hall has shown, the cost of the new services has been $74,263.59 (Defendant's Exhibit 30, Schedule 5). On this basis all the services could be duplicated for $262,758. This, of course, ignores any increased difficulty of duplication on account of paving laid since the services were first installed.

1951 The following table, based on the unit costs (Oefendant's Exhibit 30, Schedule 5) and adopting Mr. Baehr's base figures for wrought iron pipe of 3″ or less in size (Complainant's Exhibit 21, page 114) because of lack of unit costs on that, size, is submitted:

Size.	Length.	Unit cost per foot.	Amount.
3″ & Under	69,248′	45.30c	$26,001.00
4″	573,724′	45.30c	259,954.34
6″	162,004′	74.39c	120,514.78
8″	65,607′	104.36c	68,467.47
10″	32,008′	134.31c	42,989.94
12″	31,349′	120.65c	37,822.57
14″	622′	213.19c	1,326.04
16″	28,506′	213.19c	60,771.94
20″	6,036′	318.98c	19,253.63
24″	1,819′	937.27c	17,048.94
Totals	970,923′		$654,150.65

There being no unit cost in Mr. Hall's table for 14″ pipe, the figures for 16″ were used. The fact that 12″ is given slightly cheaper than 10″ frequently occurs, and is due to some difference in soil or other local conditions. Of the 970,923 ft., 522,110 ft., or a little more than half has still no pavement above it.

In addition to the pipe here valued, 34,811′ ft., or about six and a half miles, given by Mr. Hall, are probably located in Valley Junction.

1952 *Some Comparisons of Investment Cost.*

The Massachusetts companies are the only ones that can safely be employed in comparison of either construction or operating costs, because they are the only ones that have been under the direct control of the state commission for over twenty years, a commission, moreover, of undisputed honesty and considerable ability.

One may select the seven Massachusetts companies that for the last ten years have been next in size to Boston, of about the average size of the Des Moines Company, as will be shown later. None of them has a capital including both stock and bonds of over $2.58

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per thousand feet of sales. It would hardly be fair, however, to compare that with the assets of the Des Moines Company, which I have found to be $1,667,215. December 31, 1910, or $3.12 per thousand feet of sales. The Massachusetts companies, in consequence of state laws, have not issued even as much capital stock and bonds as their assets, but have obtained part of the latter by sales of stock at a premium and by accumulated profits. On the other hand, it is not exactly fair to compare their reported assets because all of the seven plants with the exception of Fall River, are mixed coal and water gas plants. These require more capital than a water gas plant. The difference on this account probably somewhat more than counterbalances the larger sales per mile of main in these companies.

1953 The following table gives the sales and the assets of these companies on June 30, 1910:

Place.	Sales in feet.	Amount of assets.
Cambridge	669,982,936′	$2,667,036.00
Fall River	495,612,338	1,435,586.00
Lawrence	417,864,700	2,032,593.00
Lowell	573,672,700	1,895,747.00
Lynn	605,591,700	1,653,229.00
Springfield	568,112,988	2,247,296.00
Worcester	637,570,200	2,023,113.00
Total	3,968,407,562	$13,954,600.00

Average 566,913,937. $3.52 per M′

The average assets in Massachusetts are reported as $3.52 per M′. This applied to the Des Moines property would mean assets of $1,872,608. On the other hand, Fall River, the only exclusively water gas plant, reported assets of only $2.90 per M′ of sales. This applied to Des Moines would mean $1,542,774.

Such comparisons are, of course, not conclusive but are certainly of some importance and tend to confirm the reasonableness of the valuations found by Prof. Marks or discovered on the books of the company by Mr. Hall, or computed in various ways from these books.

1954 *Operating Expenses.*

Broadly speaking, it is customary to divide the cost of gas into operating expenses and return on capital, or profits, operating expenses, again, may be divided into (1) manufacturing expenses, (2) all other operating expenses save depreciation, and (3) depreciation.

1. Manufacturing Cost.

The manufacturing expense has been steadily declining. In 1910 it was $165,466.44 (Hall's Report, Exhibit D) for the manufacture of 556,132,721′ of gas (Hall, Schedule 1). This was 29.75c.

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per 1000 ft. The same cost divided over the 531,991,054 feet sold (Hall, Schedule 2) means a cost of 31.10c. per 1000 ft. sold. The difference of 1.35c. is due to leakage and unaccounted for gas.

As the company only gets a revenue from the gas sold, the manufacturing cost of 31.1c. per 1000 ft. sold will be hereafter used. The cost of some items, however, in 1910, was much higher than the average of the previous four years. The following table, based on the cost per 1000 ft. of gas made and computed from Exhibit E of Hall's Report will illustrate the essential differences.

Description.	1906-9.	1910.
Repairs of Works.....	1.71c	2.55c
Oil	15.75c	11.49c
Other expenses	16.56c	15.72c
	34.02c	29.76c

As explained on Pages 11-12 of Mr. Hall's Report, this repair item of 1910, however legitimate, was certainly unusual. We might be justified in using as a proper figure for the next five years
1955 only the normal repairs account. But for the present the manufacturing expense may be left as it was in 1910, with over 0.8c. of repair costs above the normal.

It will be recalled that Mr. Lea, on page 109 of his exhibit, estimated that in 1911 558,000,000′ of gas at $1 would be sold at a manufacturing cost of $175,397, and that in 1917 735,000,000′ will be sold at a manufacturing cost of $220,657. This would mean a cost per thousand feet sold of 31.43c. in 1911, and 30.02c. in 1917. In other words, he sees nothing to prevent the continued decline in manufacturing, as also of the other costs with increase of business. If we go back to 1904 we find the total manufacturing cost was 42.35c. and 39.28c. respectively, per 1000 ft. of gas made, and somewhat more per 1000 ft. of gas sold. The manufacturing cost still further back for the four years, 1891-4 was $119,170.97 for the sale of 211,497,819 ft., or 51.6c. per thousand feet sold. The cost in the holder has steadily declined with increase of gas made and sold. There is no reason for supposing that it will rise during the next three or four years. It has been suggested that oil may rise, but Mr. Lea, in his exhibit, p. 109, gave the same cost of oil per 1000 ft.—11.5c.—in 1917 and in 1911.

1956 It has been further suggested in the cross-examination of the City's witnesses that the leakage, and therefore the expense on account of it, is likely to increase. The following table will establish the fact that the present percent of unaccounted for gas, 4.31% is slightly above that of the average rate of the eleven largest Massachusetts companies, ranging in size, with the exception of Boston, from 300,000,000 to 700,000,000 feet of sales in the last year reported, ending June 30, 1910. The data is given in the last report of the Massachusetts Gas & Electric Light Commission, Appendix, page CXCIV.

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Place.	Percentage unaccounted for.
Boston	2.94
Cambridge	4.15
Fall River	6.91
Lawrence	7.03
Lowell	1.97
Lynn	6.35
Malden	1.49
New Bedford	2.73
Newton	3.54
Springfield	2.66
Worcester	7.32
Average of 11 places	4.28
Des Moines	4.31

Since there is likely to be an increase of sales per mile of main with the growth of the city and of the business of the company and also a continuance of the present good management, there appears to be no good reason for assuming an increase in the amount of unaccounted for gas and of the cost thereof.

1957 *Operating Expenses Other Than Manufacturing and Leakage.*

On the basis of the average operating costs, other than manufacturing and leakage, of the last five years per thousand feet applied to the sales of 1910, Mr. Hall finds the distribution and other expenses $150,340.67 (Defendant's Exhibit, page 19). To this he adds a depreciation of 6¢ per M′ and adjusts the city tax to a 90c. basis. He thus reaches a reasonable cost, based on the manufacturing costs of 1910 and the average distribution and other costs of the last five years of $346,669.12. He has left all the increases of salaries and the payments to the U. G. I., but has not allowed the expenses, chiefly in 1910, incurred in the present rate litigation. He has adjusted the Federal taxes and appears to have covered every point so fully as to leave only three points upon which I would like to make some modification.

In the first place it seems fair to concede to the company the expenses on account of accidents and damages in the first two months of 1906. This amount of $3,689.00 divided over the 2,292,035′ of sales during the last five years means only 0.16¢ per M′ of sales. Applying this to the sales 531,991′, of 1910 is $851.19. The company, in complainant's Exhibit 54, has suggested 2¢ per M′ instead of the figures now used of 0.38¢ on the average for the five years plus 0.16¢ for the accidents paid for in 1906 but incurred in a previous year, or a total of 0.54¢.

In this connection it is interesting to note several things: The Company's expenditures on these matters in the only previous years
about which I have information, 1904-1905, showed only
1958 0.15¢ the first year per M′ of sales and 0.47¢ the second year, or an average for the two years of 0.31¢. Further-

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more, Mr. Lea allowed under this head of accidents and damages only 0.49¢ in 1911, gradually decreasing to 0.43¢ in 1917; and Mr. Baehr allowed 0.50¢ at the beginning of the period, gradually decreasing to 0.47¢. All of the 58 Massachusetts companies, with total sales to consumers of 11,687,845,000′, or an average of 205,146,000′, had a total expenditure for claims in 1910 of only $23,436.68, or 0.2¢ per M′ of sales. In the previous year it was only 0.3¢.

Evidently 0.54¢ for Des Moines is not only ample, but is far in excess of the probable expenditure in the future, as it has been in the past.

1959 *Donations.*

The amount spent by the company in donations in the last five years has been left intact, although donations by monopolies have often the appearance of an attempt to influence public opinion and come more or less under the general condemnation of political contributions by corporations, while donations by individuals for political or other objects are not usually so criticised.

The fact that the Traction ordinances of Chicago directly prohibit such contributions is significant.

Bad Debts.

It is contended that the abolition of a discount for prompt payment or a penalty for failure to pay promptly will much increase the losses and expenses. While I personally favor such penalty or discount in an ordinance, it is a fact that Boston, New York, Philadelphia and some other Eastern cities get along very well without it. The only figures I happen to have with me on the subject are for the Consolidated Gas Company of New York City, for 1905. At that time the losses from bad debts were only 0.63¢ per 1000 ft. of sales, while Mr. Hall and I left in the Des Moines expenses, as a basis for estimating the future, 0.64¢, which is the average of the last five years. The Iowa Supreme Court, in the Cedar Rapids case, indicated the legality and propriety of a company requiring deposits, or in other ways protecting itself, in case it cannot exact a definite penalty in the shape of a higher price for gas upon failure to pay promptly.

1960 *Rate Litigation Expenses.*

In the New York Consolidated Gas Case, the Courts recognized contests over rates and taxes as abnormal, and not to be considered in fixing rates for the future. The City of Des Moines, in fixing rates for 1909 and subsequently, had no reason to believe that the company would spend money at the rate of several thousand dollars a month for a year or more in contesting the decision. The company, not content with such profits as 90¢ may give, is willing to hazard a considerable sum to retain the monopoly profit on $1.00 gas. It is like a gamble in stocks. If the company loses it should settle the

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expenses out of its ordinary reasonable profits at 90¢, with what otherwise would go to dividends.

In other words, if the Court should find that it is legal under any circumstances to make the consumer pay the expenses of rate litigation, the Court should further consider, in this particular case, whether the company was making such a small profit on its actual investment as to make the proposed rate confiscatory and justify resistance to it. If the rate last December was not of this confiscatory nature, then surely the expense of resisting it should not fall upon the consumer.

If a merchant is competitive business enters an unsuccessful legal resistance to taxes, for example, he cannot raise the price of his goods and make the purchasers pay him for his lawsuit, or his trade will go to wiser, or better advised, competitors.

1961 *Taxes.*

In the history of the average gas company there is a tendency toward a reduction of operating cost, both manufacturing and other, with increase of sales, until at least a point has been reached far in advance of the present sales of the Des Moines Gas Company. One item of expenses, taxes, however, has a tendency to increase, but not sufficiently to counterbalance the downward tendency of other operating costs. But this tendency of taxes to increase is not so marked where companies submit readily to regulation, as where they strenuously resist the same, and thus tempt the city to increase taxes as the only available method of reducing the unearned monopoly profit.

In this connection it may be noticed that while Mr. Lea estimated taxes for 1911 at 6.91¢ or .31¢ per 1000 ft. less than is used in this computation, he estimates a gradual increase up to 1917, which a simple computation shows to be 9.67 in that year, or an increase of 2.75¢. But on the other hand he estimates that the total operating expenses, aside from taxes, will fall 5.86¢. At least that is the effect of the figures given of sales in feet and expenses in dollars.

Taxes do not always rise, even in the Des Moines Gas Company. During the four years 1891-1894 inclusive, they were 10.9¢ per 1000 feet, and have been between 5.56¢ and 7.22¢ during the last seven years, with the exception of 1909 when they were 7.66.

The assessment of the property of the Des Moines Gas Company recently made, of $1,375,000, is so near the present physical value of its property that it is by no means certain that in the years hence the taxes will be raised any more than the increase of sales during that period.

1962 *Expenses Other Than Manufacturing and Leakage Abnormal in* 1910.

The expenses other than manufacturing, leakage and taxes for the last five years, as shown in Defendant's exhibit 30, page 5 and from data for the previous two years obtained for me by Mr. Sang-

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ster from the books of the company, and for 1890 to 1894 inclusive given by Messrs. Pratt and Lillie, in 1895, are worthy of study. They are as follows:

Period.	Expenses other than manufacturing, leakage and taxes.
1904	19.57¢
1905	18.50¢
March 1, 1906-7	19.63¢
March 1, 1907-8	19.29¢
March 1, 1908-9	18.30¢
Mar. 1-Dec. 31, 1909	22.52¢
1910	26.86¢

The average of the rates of the five years preceding 1909 was 19.06. The cost in 1909 of 22.52¢ was a most unusual increase. Nothing like it had appeared during the previous five years, and perhaps not for a much longer time. But on top of this comes another enormous jump,—26.86¢ in 1910. That figure is 7.8¢ higher than the average of the five years preceding 1909, and is over 7% higher than the highest year.

In other words, the year 1910, is over 40% higher than the average of the five years before 1909. It is 37% higher than the highest of those five years. There is therefore overwhelming reason for holding that the year 1910, being such an absolute exception to the previous experience both of the Des Moines Company and of gas companies in general, excepting immediately preceding contests over rates, as to fully justify the throwing out of 1910
1963 and substituting for it 1904 and 1905. Even if the exorbitant expenses of 1909 were included in a six year average, the cost other than manufacturing, leakage and taxes would be 7¢ lower than in 1910, and even with the including of taxes would be over 1½¢ lower than the figures I have taken for the five year period.

An equally favorable situation for the company is obtained by taking the average expenses other than manufacturing, leakage and taxes for the four years preceding 1910, instead of for the six years.

It is to be greatly regretted that the lesson from the books of the company with reference especially to the extraordinary character of the 1910 expenses, and to some extent even of the 1909 expenses, was not fully realized sooner. The accounts of 1901, 1902, 1903, 1904 and 1905 should be investigated.

1964 *Profits at 90 Cents.*

It makes little difference whether Valley Junction be excluded or not. To exclude the small revenue in excess of 90¢ from that source would involve the exclusion also of all the operating expenses and capital connected with it. In the absence of sufficient data,

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and in the belief that a true separation would not change the result to Des Moines a quarter of a cent per thousand feet, Valley Junction is allowed to remain in the accounts.

Following thus far the method followed by Mr. Hall in his exhibit 30, page 19, we have the estimated & the next revenue available for interest and other charges, of $145,173.06, by the four year average of distribution and general expenses and $135,863.22 by the five year average. In either case certain adjustments may be made. The accident claims be increased by 0.16¢ or $851.19 and the taxes by 0.44¢ or $2,340.76 a total increase of expenses of $3,191.95. The depreciation may be reduced from $31,919.46 on the 6¢ per 1000 ft. basis to $21,490.40 on the sinking fund basis—a reduction of $10,429.06. The net reduction in expenses from these readjustments is $7,237.01.

The case then stands, with 90¢ gas in Des Moines as follows:

Description.	Four-year basis.	Five-year basis.
Net Revenue	$145,173.06	$135,863.22
Adjustments to be added	7,237.01	7,237.01
	$152,410.01	$143,100.23
Return on $1,566,865	9.61%	9.13%
The Profits are 8% on	1,905,125.00	1,788,753.00
" " " 6% "	2,540,168.00	2,385,004.00
" " " 7% "	2,191,572.00	2,044,289.00
Profit per 1000 ft. of sales in 1910 (531,996,000 ft.).....	28.65¢	26.9¢

1965 The first and larger of these estimates is called a four year estimate prior to 1910 on all expenses save manufacturing, taxes and leakage, where 1910 figures are always used. In reality the four year estimate might be called a six year or normal condition prior to 1910. If the Courts shall add $50,000 to the cost of the land, it will raise the investment to $1,616,865; but it will also mean an increased revenue of at least 1.1¢ per 1000 ft., as already explained. This would mean an increased revenue from last year's sales of $5,853, or 0.36% on the investment above of $1,616,865. The addition of the land value to the investment would reduce the return from 9.61% to 9.43% on the four year basis and from 9.13% to 8.85% on the five year basis. But the corresponding addition to a yearly revenue from increase in value of land, amounting to 0.36% on the total investment would bring back the return, on the four year basis, to 9.79% and on the five year basis to 9.21%. In other words, the company would gain more than it would lose by securing the increased value of the land in its capital account, and then being forced to see that yearly increase credited to revenue account, as has been done in the recent decision of the Public Service Commission for the First District of New York, which is the City of Greater New York.

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1966 *Market Return on Bonds.*

Latest Market Quotations.

Below are given the latest prices bid for all artificial gas bonds in the Bank and Quotation Section of the Commercial and Financial Chronicle, for August 5, 1911. This journal, published in New York, is the recognized authority for market quotations.

Nearly all gas bonds quoted in the journal are 5% bonds. If any such are omitted in the following table it is an oversight. The bonds of a few natural gas companies, however, may be in the list. If so, they will tend to lower the average, for the future of natural gas is not considered as bright as that of artificial gas.

Description.	Price bid.
Altoona Gas	97
American Gas and Electric	86⅛
Atlanta Gas Light	103
Atlantic City Gas	90
Bay City Gas	93
Binghamton Gas	98
Blackstone Valley Gas and Elec.	99½
Bronx Gas and Electric	96¾
Brooklyn Gas	100
Brooklyn Union Gas	107
Burlington (Vt.) Gas Light	89
California Gas and Electric	99⅞
	95⅞
	101½
Colorado Springs Light, Heat and Power	92
	97
Consolidated Gas of Baltimore	108¾
Cons. Gas, Elec. Lt. and Power, Baltimore	100
Consolidated Gas, New Jersey	93
Consolidated Gas, Pittsburgh	93
Dayton Gas	99
Denver Gas & Electric	93½
	100¾
Detroit Gas	98
	100½
Equitable Gas and Electric, Utica	102
Equitable Ill. Gas, Philadelphia	106½
1967 Evansville Gas and Electric Light	93
Gas and Electric Company of Bergen County	101
	97
Grand Rapids Gas	99
Haverhill Gas	90
Hudson County Gas	103¼
Hudson River Gas and Electric	95

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Description.	Price bid.
Indianapolis Gas	80
Jackson Gas	97½
Jacksonville, Fla., Gas	92½
Kankakee (Ill.) Gas and Electric	91
Kansas City, Mo. Gas	97½
Kansas City, Mo. Gas and Electric	95
Kenosha Gas and Electric	101
Knoxville Gas	85
Laclede Gas	103¾
	102
Lansing Fuel and Gas	93¾
Leavenworth Light, Heat and Power	94
Lockport Gas and Electric	95
	97½
Los Angeles Gas and Electric	97⅜
	99½
Louisville Light	90
Memphis Gas and Electric	99
	101
Michigan City Gas and Electric	94
Montreal Light Heat and Power	102½
Muskogee (Okla.) Gas and Electric	93
	97½
	97
National Light Heat and Power	92
	92
Newark Consolidated Gas	104
New Castle (Ind.) Light Heat and Power	96
	104
New London Gas and Electric	100
	100
New York Gas, Elect. Light Heat and Power	104⅛
Central Union Gas (N. Y.)	101
Equitable Gas Company (N. Y.)	105
New Amsterdam (N. Y.) Gas	101¾
New York and East River Gas	104½
	101¾
New York and Westchester Lighting	102½
Northern Union (N. Y.) Gas	100
Standard Gas	105
New York and Queens Gas	99½
	100
New York and Richmond	96
Northwestern Gas (Chicago)	99
	94½
Norwich, Conn., Gas	101
1968 Oakland Gas	101¾
Ogden Gas, Chicago	93¼
Oklahoma Gas and Electric	97

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Description.	Price bid.
Omaha Gas	97
Pacific Gas and Electric	98¾
Pacific Light and Power	98¼
Pacific Power and Light	92
Patterson and Passaic Gas and Electric	101
Pawtucket Gas	90
	101⅝
	103
	101⅝
Peoples Gas (Chicago)	101
	100¾
Peoria Gas and Electric	98½
Philadelphia Suburban Gas and Electric	91
Portland (Ore.) Gas and Coke	99½
Queenboro (N. Y.) Gas and Electric	97
Quincy (Ill.) Gas Electric and Heat	80
	94¾
Rochester Gas and Electric	100¼
Saginaw City Gas	95
St. Joseph Gas	92
St. Paul Gas	97½
San Diego Gas and Electric	97½
Seattle Lighting Company	100
Shelby County (Ind.) Water Gas and Electric	91
Springfield (Ohio) Light Heat and Power	92½
Suburban Gas of Philadelphia	98
Syracuse Gas	102
Tacoma Gas	88½
	98
Troy Gas	110
United Gas and Electric of New Jersey	94
	99
Utica Gas and Electric	100
Van Wert (Ohio) Gas Light	97
Washington Gas	109⅝
Westchester (N. Y.) Gas	103
Western United Gas and Electric	97
Wilkes Barre Gas and Electric	102⅝
Williamsport Gas	96
Wilmington (Del.) Gas	98½
Wyoming Valley Gas and Electric	100
Number of Companies represented	97
Number of Securities quoted	125
Average of Quotations	97.6

Note only conscious omission has been that of the Toledo (Ohio) Railways and Light Company, on whose bonds, covering gas, electric light and street railways, interest has not been paid for about two years.

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1969 It has just been shown that all the issues of 5% gas bonds in the market were quoted early in August at 97.6, but it has been assumed that the 5% bonds of the Des Moines Gas Company would sell at 93. This is strikingly confirmed by the testimony of Mr. Hagenah, given after the above quotation was worked out. He has shown that while all of the 412,000 par value bonds issued since 1906 were sold for $378,050, or at an average price of 91.76, yet the $145,000 worth of bonds sold in the last two years, since March, 1909, netted the company $137,750, or 95% of the par value.

In this connection the following quotation from a recognized organ of the Gas interests, the "Progressive Age," for April 15, 1911, may be quoted: "Gas bonds as a class are securities which merit a high degree of confidence, says the Wall Street Journal. Investors generally have been told by the banking houses the *the* business has aspects of security about it that make the bonds desirable, but there has not been that amount of information given to enable a full appreciation of the fact. The market standing of gas bonds generally is evidence of their investment position. Selling on a basis close to 5 per cent, they are among the most tried of the public utility securities. On the good record of many years and the development that has been noticeable in the business as municipalities have grown and the extension of the uses of gas have been multiplied the bonds have acquired a rather distinctive place in the ranks of public service obligations. Some considerations that investors must keep in mind touch upon such matters as the competition that the plant has, the character of franchises enjoyed and the record of the Co. for earnings over a period of years, etc. In some instances all of these questions seem almost unnecessary, especially where a company enjoys a virtual monopoly of the business in a large city.

1970 "Over the past few years many economies have been effected in gas production by the introduction of modern methods of manufacture. Operating costs have had a tendency to reach a lower average, thus making for the betterment of the margin of net earnings applicable to bond interest. Where the operations include electrical distribution in connection with the gas business, under a consolidation of companies, there are, of course, somewhat different and additional factors entering into the measurements of the value of bonds. Also where securities are based upon property producing natural gas there are still other qualifications necessary, as a new element of risk is present here.

"As an investment the bonds placed upon a plant artificially producing gas located in a community of growth and reasonable size, or covering several communities where the conditions for growth are very promising, constitute a public service investment that may be regarded as among the best."

1971 *Market Return on Stock.*

It is more difficult to determine the return on the market value of the stock than on the market value of the bonds of gas com-

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panies. There are several reasons for this. Few stocks are quoted in the markets. The price bid for the stocks quoted is affected by uncertainties as to the amount of future dividends even in prosperous companies. The attempt, therefore, will only be made to study the stocks of a few companies that for the most part, like the Des Moines Gas Company, have been long in the field and have shown a steady growth in business and in net earnings.

The Massachusetts Gas Company, controlling both the Boston Gas Company and other gas companies in Eastern Massachusetts, has for some time been paying 4% on both its common and preferred stock. The common is quoted at 95½ and the preferred at 96½. On this basis an investor in the common stock will secure 4.19% and in the preferred 4.14%.

The facts as to the Montreal Light, Heat and Power Company for the last three years, as given in the early August issues of the Progressive Age and the Commercial and Financial Chronicle (the authorities for all the companies quoted) are as follows:

Year.	Dividends.	Total earnings reported.
1908–9	6%	10.25
1909–10	7%	11.25
1910–11	7½%	12.37

The last bid on the stock was 167⅜. This indicates that an investor would at that price this year secure a return of 4.5%. Were the total earnings distributed, however, he would secure 7.4%. The investor is not sure of getting the full earnings, but may have a reasonable expectation of securing before long some increase 1972 in dividends. It is somewhat questionable whether he may expect more than an average return of 6%. It is likely that if a large increase of dividends is considered certain, the price of the stock will rise enough above the present quotation to leave little, if any, more than 6% to any investor at the time of the dividend.

The Brooklyn Union Gas Company pays 6% dividend, and its stock is quoted at 143, or a return of 4.2%. It claims an earning, however, in 1910 of 9.88%, which is a return of 7% on the price bid for the stock. Doubtless the investor in the stock feels confident that on his investment of $143 per share he will in time secure 5% or 6%.

The Consolidated Gas Company of New York pays 6% on stock which is quoted at 146½. This means a return of 4.1%. The ready sale of this stock, and the possibility of larger dividends in the future may explain the quotation.

The Peoples Gas Company of Chicago has been paying 7% dividends for about two years. Its stock has recently been 106, which nets the investor 6.6%. Last year, however, before the probability of a material reduction in price, the stock was considerably higher, so that the new investor was not able to secure more than 6%.

The Laclede Gas Company of St. Louis pays 7%, and its common stock is quoted at 106¾, which means a return to the investor of

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6.6% on the price now bid. The large amount of water in this stock and its possibility of public regulation of rates are doubtless responsible for the low quotation.

The first company to be considered, and one having an important bearing on the Des Moines case, is the United Gas Improvement Company, the owner of the Des Moines Gas Company.

This company has been paying 8% dividends for some years, although March 1, 1910 it paid an extra dividend of 10%. The earnings of the company are reported in the Progressive Age
1973 for July 1st as 13.05% during the last twelve months.

As investor in the stock today, paying 157½, the latest market quotation, would find his dividends at 8% equivalent to 4.56% on his investment, and the earnings 7.44%. His hope of extra dividends in the immediate future would be equivalent to some figure between these two. The average of the two rates of return on the present quotation of stock is 6%.

It seems fair to assume that the investor today in such a company is regarding it as something between a 4½% and a 7½% investment, or appproximately a 6% investment.

The above data shows that in an old and reliable company a 5% bond and a 6% stock will sell almost or quite at par. The 128 issues of 5% bonds in 98 different companies are shown to have an average value today of 97.4.

It is a little harder to give the exact value of a 6% stock, but it is practically at par. In order, however, to cover brokerage charges and discount and be on the conservative side, it may be assumed that a 5% bond and a 6% stock even in a company as old as that of the Des Moines Gas Company, would not net the company more than 93.

Let us further assume that half of the investment is raised by bonds and the other half by stock. The company can create a sinking fund at 4% to redeem the discount of 7% per share at the end of thirty years. If now $100,000 par value of all 5% bonds and $100,000 par value of 6% stock were sold at 93, the cost to the company for the $93,000 each obtained from the bonds and the $93,000 from the stock, or $186,000 in all, would be as follows:

1974	Interest at 5% on the par value of bonds.....	$5,000.00
	Annual dividend at 6% on the Par Value of Stocks	6,000.00
	Annual additions to Sinking Fund required to redeem $14,000 in 30 years.....	250.00
	Total charges on a cash investment of $186,000.	$11,250.00
	Percent of burden on $186,000.....	6.05%

In other words, even if the 6% stock and the 5% bonds sold at 93, the interest and dividend charge and the sinking fund on the discount would amount to only 6%.

With a property where the securities represent only the actual

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cost, bonds frequently cover more than half of the actual investment. It may be that a higher return than 6% is just on railroads in Minnesota and the Northwest where there is risk of partial failure of crops and the expense of unusual storms, snow and cold, and of financial disasters which may greatly lessen traffic. But the history of the Des Moines Gas Company, as of all such companies, shows that these risks are either non-existent or only to a slight degree present.

Moreover, and this is a very important point, if the issues of stock and bonds only cover the actual physical value or cost of the investment, which is not far from $1,500,000 in the case of the Des Moines Gas Company, the chances of floating a 6% stock and a 5% bond at par would be very much greater than in companies where the securities represent a large amount of water, or of so-called intangible values. Either in the public regulation of the rates or in condemnation proceedings there is little risk in an investment where the outstanding securities do not exceed the cost of the physical properties.

1975 Since writing the above on relation to stock and bonds, I have run across a further confirmation of the position taken. It is in the recognized organ of the gas interests, The Progressive Age, in their issue of May 1, 1911; in which they take the position that a return of 6.83% to the buyers of Laclede gas stock is very much in excess of the average return to the investor who buys stock today at market quotations. The Progressive Age says "Since September, 1910, the common stock has received dividends at the rate of 7 per cent. annually. Laclede Gas Stock, receiving 7 per cent. per annum, gives a return at the present price of about 102½ of 6.83 per cent. In view of the very substantial earning power shown, increased benefit in the matter of dividends may reasonably be expected, especially as the company recently paid off $1,000,000 of notes due February 1, 1911, thereby reducing the annual fixed interest charge. The return on some prominent public service corporation stocks is approximately:

Brooklyn Union Gas	4.23%
Consolidated Gas (New York)	4.14%
Detroit Edison	4.63%
Montreal Light	4.83%
Providence Gas	4.21%
United Gas Improvement (Phila.)	4.57%

"Hence it appears that although St. Louis is the fourth largest city in the United States and that the Laclede Gas Light Company has a monopoly of its local gas field, the stock of the company can be bought on the Stock Exchange on an investment basis seldom to be had in a stock of equal merit."

In view of all the above, it is evident that if today the company had the franchise for furnishing gas in a city of the size and character of Des Moines, and only proposed to issue securities to the extent of the actual investment necessary for the construction of the

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plant, a 6% stock and a 5% bond would be likely to sell at better than 93.

1976 *Future Growth and Profits.*

Mr. Lea has estimated that even with dollar gas the growth of sales will be 203,000,000 ft., or over 38%, in the next seven years following 1910. He also estimated a marked reduction in operating costs, and that to take care of this 40% more of business only 20% more of mains will be required. (Testimony, page 1044).

The increase of land, manufacturing and holder capacity, meters and services will not have to exceed the increase in sales. The investment per 1,000 feet is likely to decrease, and the profits available for interest and dividends are likely to increase both in cents per thousand feet and in the percentage on the investment over estimates based on 1910 or 1904-'10 conditions.

The question is not the reasonableness of 90¢ gas for the past, but for 1910 and the years immediately following.

Nearly all gas engineers, unless in rate cases, admit that reductions in price stimulate sales. Milwaukee, Grand Rapids, Detroit, Indianapolis, Boston, Brooklyn, New York and other cities abundantly prove this. With every reduction in price, new inroads are made on the use of coal, and the advance of electricity for lighting purposes is checked.

The Consolidated Gas Company of New York in 1908 was selling only 6% more gas at one dollar than in 1904, and claimed that its sales 9,000 feet yearly per capita indicated that the point of saturation had been reached. Yet in two years thereafter, under 80¢ gas, the consumption rose 2%. In Brooklyn the sales increased 22% during the last four years of dollar gas, 1903-'6, and 54% during the first four years of 80¢ gas, 1907-'10. Similar re-
1977 sults in Boston and Chicago might be cited. In all these cases the investment has not increased proportionately to the sales save in New York, where conditions, independent, in large part, of the growth of the business led to the erection of coal gas works at Astoria.

1978 *Massachusetts' Experience.*

There are seven companies in Massachusetts about the size of the Des Moines Company. They do not buy any of the gas that they sell, as do some other Massachusetts companies, and they sell less than 2% of their make to other companies. Only one of these companies, Fall River, makes exclusively water gas as does Des Moines. The candle power in less than in Des Moines, while the cost of coal and oil is higher, in Massachusetts. Nevertheless some legitimate and striking comparisons can be made.

These Eastern companies are in the only state which has for more than three or four years attempted careful and systematic collection and tabulation of data. The official gas reports of the State of Massachusetts go back to 1884, and have been very complete during the last five years.

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The first comparison will be on population supplied, as given by the State Census in 1895 and the national census of 1900 and 1910, as follows: The year given is for the twelve months ending June 30th of the year at the head of each column:

Population Supplied.

Place—	Population, 1900.	Population, 1905.	Population, 1910.
Cambridge	126,152	135,942	158,924
Fall River	104,863	105,762	119,295
Lawrence	74,314	89,972	100,170
Lowell	105,889	107,135	118,575
Lynn	78,145	88,436	104,771
Springfield	69,164	85,100	107,683
Worcester	118,421	128,135	145,986
Totals	676,948	713,482	855,404
Averages	96,707	101,926	122,201

1979 The Sales of these Seven Companies were as follows:

Place—	Sales, 1900.	Sales, 1905.	Sales, 1910.	Per capita, 1910.
Cambridge	276,284,562′	439,162,251′	669,982,936′	4,222′
Fall River	169,251,157	321,119,341	495,612,338	4.155
Lawrence	138,314,175	261,888,830	417,864,700	4,172
Lowell	345,359,900	482,088,600	537,672,700	4,830
Lynn	183,843,000	358,776,700	605,581,700	5,781
Springfield	152,272,000	311,678,930	568,112,988	5,276
Worcester	264,333,900	410,641,700	637,570,200	4,367
Totals	1,529,658,694	2,585,356,352	3,968,397,562	
Averages	218,522,671	369,336,622	566,913,937	
Per Capita	2,260	3,624	4,639	4,639

1980 *Sales Per Mile of Main and Per Meter.*

The total miles of main, the total meters, the sales per mile of main and the sales per meter during the three periods were as follows:

Mains, Meters and Sales.

Year.	Miles of main.	Meters.	Sales per mile of main.	Sales per meter.
1900	611	62,839	2,503,533	24,342
1905	825	103,222	3,133,765	25,046
1910	1,072	152,575	3,701,863	26,002

The last two tables are in line with the experience of Des Moines and other gas companies, in that the sales per capita and per mile of

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main tend to increase rapidly, while sales per meter do not increase very much. This means that with increase of business there are more meters and therefore more consumers per mile of main. Since mains are a far larger part of the investment that are meters there is a tendency for the investment per thousand feet of gas to fall with the increase of sales.

With the fall in price and the influence of an energetic management, present consumers use more gas per meter, but a new group of small consumers is added, which keeps down the average sales per meter, while increasing the sales per mile of main, and even per service. Several meters may be connected with one service in tenement and business blocks.

In Chicago, for example, the average sales per meter are 33,318 feet, but from 24.43 per cent of the meters the sales average only 9,280 feet.

1981 *Receipts From Gas.*

Place.	1900.	1905.	1910.
Cambridge ...	$275,823.71	$443,577.34	$588,574.89
Fall River ...	199,812.16	325,384.34	428,088.12
Lawrence	157,280.57	263,778.40	377,079.66
Lowell	347,193.69	438,572.53	539,741.23
Lynn	184,570.17	322,606.26	470,284.84
Springfield ..	191,453.80	311,254.53	481,228.95
Worcester ...	281,268.68	412,726.51	513,283.30
	$1,637,402.78	$2,517,899.91	$3,398,280.99
Sales	1,529,658,694	2,585,356,352	3,968,397,562
Average Price.	107.0¢	97.4¢	85.6¢

Prior to 1910 the sales were almost exclusively to consumers, but in 1910, 63,637,236 feet, or less than 2%, was sold chiefly to other companies, in Springfield, at an average price of 43.8¢. Eliminating these sales, the average price of gas sold directly to consumers in 1910 was 86.3¢. This represents a fall of 21¢ in ten years, and 11¢ in the last five years; and it surely helps to explain the large increase in sales, and in per capita sales, already given.

1982 *Operating Expenses & Gross Receipts.*

In the two tables which follow are given the operating expenses and the profits from operation after paying taxes but before allowing for depreciation.

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Operating Expenses.

Places.	1900.	1905.	1910.
Cambridge	$173,018	$290,956	$397,468
Fall River	139,643	223,232	270,117
Lawrence	113,488	203,641	272,630
Lowell	223,200	315,800	332,488
Lynn	124,003	186,262	286,907
Springfield	105,244	203,583	329,836
Worcester	162,128	285,840	339,442
Totals	$1,040,724	$1,709,314	$2,229,159
Averages	68.0¢	66.1¢	56.2¢

Profits From Operation.

	1900.	1905.	1910.
Cambridge	$103,242	$159,011	$191,111
Fall River	60,344	103,373	158,188
Lawrence	43,890	60,187	104,449
Lowell	123,994	122,773	216,623
Lynn	60,567	136,344	183,043
Springfield	86,544	108,330	151,393
Worcester	119,272	127,054	174,488
Totals	$597,853	$817,072	$1,179,295
Averages	39.1¢	31.6¢	29.7¢

Before Deducting Depreciation.

1983 The important feature in these tables is that the entire margin for return on capital and for meeting depreciation not covered by repairs and maintenance, in these prosperous Massachusetts companies, fell from 39.1¢ per 1000 feet of sales in 1900 to 29.7¢ in 1910.

1984 *Depreciation and Net Profits.*

In these seven companies the amount set aside to meet depreciation during the three years, and the net profits after deducting depreciation, were as follows:

Gross Profits, Depreciation & Net Profits.

Description.	1900.	1905.	1910.
Gross Profits	597,853	817,072	1,179,295
Depreciation	82,691	110,855	133,931
Net profits from Operation	515,162	706,207	1,045,364
Sales	1,529,658,694′	2,585,356,352′	3,968,397,562
Net profits per 1000 ft.	33.7¢	27.3¢	26.3¢

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This table shows that the Massachusetts companies were securing from the consumers in 1910, in the form of profits, whether divided into interest and dividends or put into surplus, only 26.3¢ per 1000 ft., after paying for repairs and maintenance and setting aside $133,931, or 3.37¢, for depreciation.

The fairest and largest generalization that can be made is to combine the entire seven Massachusetts companies next in size to Boston, for the last five years ending June 30, 1910, with the following striking results:

1985 *Seven Massachusetts Companies for Five Years.*

Average Cost, Profit and Price.

Description.	Amount.	Per 1,000 ft
Sales	16,925,880,932'	
Manufacturing cost	$6,369,168.43	37.63
Other costs	3,649,070.80	21.56
Total operating cost	10,018,239.23	59.19
Depreciation	521,089.56	3.08
Total operating expense and depreciation	10,539,328.79	62.27
Profit from operation	4,648,763.84	27.46
Price	15,188,092.63	89.73
Excess of price above manufacturing cost	8,818,924.20	52.10

Throughout the five years these typical companies have been content with a profit of 27.46¢ and with a margin between manufacturing cost and leakage on the one hand and price on the other of only 52.1¢.

1986–2016 The comparison with Massachusetts may be tabulated in cents per 1000 ft. of sales:

Des Moines' profit at 90¢ on five years' basis	26.90
Des Moines' profit at 90¢ on four years' basis	28.65
Massachusetts' profit in the seven largest companies below Boston, in 1906-10 inclusive	27.46
Same in 1910	26.30
Margin in Des Moines between price of 90.7¢ and holder cost plus leakage, 31.1¢	59.60
Margin in Massachusetts during the last five years	52.10
Same during 1910	53.40

The Des Moines company at 90¢ will have as large a margin for distribution and general expenses as do the seven Massachusetts companies, whose average price last year was 85.6¢ and who nevertheless have since then still further reduced their price, thou

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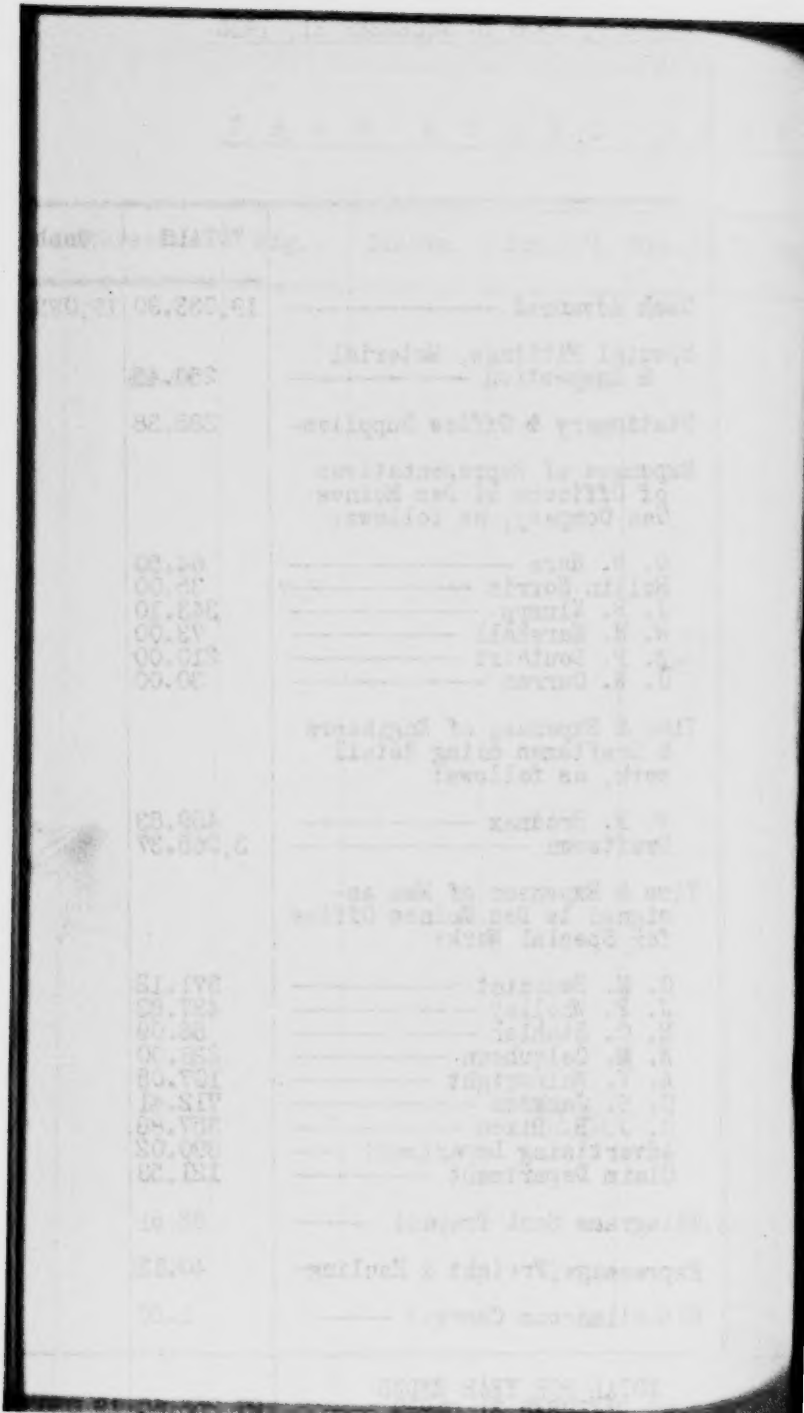
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their average sales were no greater last year than in Des Moines in 1911, and although their manufacturing cost of 32.24¢ and their taxes and leakage combined were no larger than in Des Moines in 1910.

A company of this size, with the taxes and manufacturing costs prevailing here, would be expected to sell for 85¢ in Massachusetts.

(Here follow Defendants' Exhibits 48 to 59, inc., marked pages 2017 to 2026, inc.)

2027 (DEFENDANTS' EXHIBIT 67.)

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

Des Moines Gas Company.

Comparative Statement of Cost per M. C. F. of Manufacturing a Distributing Gas. Eight Months to August 31, 1911, *and Ye Ended December* 31, 1910.

	Eight months to August 31, 1911.		Year 191
	Expense.	Per M. C. F.	Per M. C.
Manufacturing	$3,266.10	.90¢	.6
Boiler Fuel.....	6,663.96	1.83	2.8
Expense Works..	4,886.69	1.35	1.3
Generator Fuel..	34,839.64	9.59	10.3
Manufacturing Labor.....	7,070.15	1.95	1.9
Oil	41,825.81	11.51	11.4
Purification Supplies	711.61	.20	.1
Purification Labor	293.31	.08	.0
Repairs Works..	4,185.96	1.15	2.5
Water Tax.....	469.75	.13	.1
Total	104,212.98	28.68	31.6
Less: Residuals..	5,366.62	1.48	1.8
Total Manufacturing.....	98,846.36	27.21	29.7
Distribution	3,895.04	1.11	.7
Complaint Expense.....	1,815.45	.52	.6
Distribution Office Expense...	3,697.82	1.05	1.1
Gratuitous Work	3,059.88	.87	1.2
Forward	12,468.19	3.55	3.7

2028

Des Moines Gas Company.

	Eight months to August 31, 1911. Expense.	Per M. C. F.		Year 1910. Per M. C. F.
Distribution (Continued) Forward.....	$12,468.19	3.55		3.74
Repairs Mains...	4,407.89	1.26		1.76
" Services.	4,703.92	1.34		.98
" Meters..	3,930.18	1.12		.98
Setting and Removing Meters	3,700.83	1.05		1.01
Street Mains Abandoned ...	.....	....		.02
Total Distribution.....	29,211.01	8.32		8.49
Commercial Expense.	1,676.68	.48		.36
Expense Collection.....	4,615.62	1.31		1.20
Expense Office ..	9,006.76	2.57		2.85
Office Salaries...	16,716.97	4.76		4.60
Total Commercial.....	32,016.03	9.12		9.01
New Business.....	.....	....		.59
Promotion Management.....	1,791.10	.51		...
Promotion Office Supplies and Expense.....	2,838.63	.81		...
Miscellaneous Advertising	2,293.14	.65	Advertising	1.29
Newspaper Advertising	2,070.78	.59		
Soliciting	7,231.23	2.06		1.81
Appliance Demonstrations.....	928.35	.26		.32
Appliance Exhibitions.....	1,617.63	.46		...
Forward	18,770.86	5.34		4.01

2029 Des Moines Gas Company.

	Eight months to August 31, 1911. Expenses.	Per M. C. F.		Year 1910. Per M. C. F.
New Business (Continued) Forward.....	$18,770.86	5.34¢		4.01¢
Gas Appliances..	2,749.58*	.78*		.41*
Gas Engine Expense.....	.....	....		.01
House Fitting Expense.....	586.37*	.17*		.03*
Gas Arc Lamps..	161.23*	.05*		...
" Maintenance	1,049.27	.30	{ Rental and }	.94
" Depreciation	1,318.76	.38	{Maintenance}	
Lamps	605.05*	.17*		...
Gas Stove Depreciation	.....	....		.02
Total New Business.....	17,036.66	4.85		4.54

[*In red in copy.]

General Expense:				
Accidents and Damages.....	3,553.10	1.01		.49
Association Meetings.....	436.10	.12		.22
Expense General	568.04	.16		.28
" Extra..	1,773.40	.51		.75
Insurance	1,300.62	.37		.35
Litigation	691.64	.20		.19
Uncollectible Bills	1,964.40	.56		.62
Street Lamp Operating.....	474.64	.14		.12
Salaries General.	6,666.67	1.90		1.88
Total General Expense.....	17,428.61	4.97		4.90

DEFENDANTS' EXHIBIT No. 68.

10-4-11.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

Des Moines Gas Company.

Statement of Additions to Plant and Property, January 1st to August 31st, 191

	Total.	January.	February.	March.	April.
Pipe Threading Machine	130.25	.....	.....	130.25	.....
Feed Water Heater	2,819.38	2,296.91	289.56	189.70	43.21
Manhole	199.49	.....	.....	70.50	128.99
Draft Regulator	80.09	.....	.....	.....	33.93
New Set	1,083.69	.....	207.39	201.38	302.03
Coke Shed and Apparatus	5,883.50	318.20	2,033.92	165.90	138.01
Mains 4"	9,739.08	.41	.....	43.44	1,247.20
6"	3,071.06	.....	.....	33.89	.....
8"	3,378.54	.....	.....	32.16	571.93
10"	897.42	.....	.....	.....	.....
12"	1,010.00	.....	434.34	.....	.....
16"	1,052.43	1,052.43	.....	.....	.....
"	110.27	.....	.....	.....	.....
Services	8,140.50	189.94	467.59	711.70	1,059.61
Meters	7,126.08	982.68	373.47	6.65	991.24
New Meter Connections	1,297.11	92.90	185.28	118.–5	186.02
Street Lamp Extension	76.38	.....	.....	.....	52.34
Real Estate	100.06	.....	.....	100.–6	.....
Waste Heat Boiler	25.81	.....	.....	25.–1	.....
Photometer	129.75	.....	.....	.....	.....
Pump	786.33	.....	.....	.....	.....
Purifier Changes	19.60	.....	.....	.....	.....
Works Office Extension	12.00	.....	.....	.....	.....
Three Way Cock	150.67	.....	.....	.....	.....
Indicator	102.75	.....	.....	.....	.....
Improvement River Front	232.24	3.70	14.67	29.48	39.19
	47,654.48	4,937.17	4,006.22	1,845.77	4,793.70

DEFENDANTS' EXHIBIT No. 68.

10-4-11.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

Des Moines Gas Company.

Statement of Additions to Plant and Property, January 1st to August 31st, 1911.

Total.	January.	February.	March.	April.	May.	June.	July.	August.
0.25	.....	.....	130.25	.....	.....	.....	.....	.....
9.38	2,296.91	289.56	189.70	43.21	.....	.....	.....	.....
9.49	.....	.....	70.50	128.99	.....	.....	.....	.....
0.09	.....	.....	.....	33.93	39.61	6.55	.....	.....
3.69	.....	207.39	201.38	302.03	95.38	180.36	97.15	.....
3.50	318.20	2,033.92	165.90	138.01	327.45	1,187.26	1,384.87	327.89
9.08	.41	.....	43.44	1,247.20	967.69	3,316.22	1,191.90	2,972.22
1.06	.....	.....	33.89	.....	372.38	714.14	.....	1,950.65
8.54	.....	.....	32.16	571.93	428.86	2,336.31	1.78	7.50
7.42	.....	.....	.....	.....	27.25	.....	870.17	.....
0.00	.....	434.34	.....	.....	39.48	234.67	81.77	219.74
2.43	1,052.43	.....	.....	.....	.....	.....	.....	.....
0.27	.....	.....	.....	.....	.....	110.27	.....	.....
0.50	189.94	467.59	711.70	1,059.61	1,671.96	1,324.43	1,123.61	1,591.66
6.08	982.68	373.47	6.65	991.24	12.13	1,978.40	2,590.71	204.10
7.11	92.90	185.28	118.–5	186.02	274.72	137.34	189.97	112.73
6.38	.....	.....	.....	52.34	13.29	10.75	.....	.....
0.06	.....	.....	100.–6	.....	.....	.....	.....	.....
5.81	.....	.....	25.–1	.....	.....	.....	.....	.....
9.75	.....	.....	.....	.....	.....	.....	129.75	.....
6.33	.....	.....	.....	.....	.....	.....	.....	786.33
9.60	.....	.....	.....	.....	.....	.....	.....	19.60
2.00	.....	.....	.....	.....	.....	.....	.....	12.00
0.67	.....	.....	.....	.....	.....	.....	.....	150.67
2.75	.....	.....	.....	.....	.....	.....	102.75	.....
2.24	3.70	14.67	29.48	39.19	56.70	12.85	52.71	22.94
4.48	4,937.17	4,006.22	1,845.77	4,793.70	4,326.90	11,549.55	7,817.14	8,378.03

2030 Des Moines Gas Company.

	Eight months to August 31, 1911. Expenses.	Per M. C. F.	Year 1910. Per M. C. F.
Taxes:			
General†	$19,291.87	5.50¢	5.24¢
Special City Tax.	7,291.68	2.08	1.98
Total Taxes...	26,583.55	7.58	7.22
Leakage	.....	.96	1.35
	221,122.22	63.01	65.27
Miscellaneous Sales..	86.76	.02	.08
Total Operating Expenses.....	$221,035.46	62.99¢	65.19¢

†Including Federal Tax for year 1910, $1,287.37, paid in 1911.
The above Statement does not include Rate Litigation Expense charged during the period $47,131.16.

Total Gas Manufactured during period to Aug. 31, 1911 363,261,636′
Total Gas Accounted for " " " " 350,908,353′

(Here follows Defendants' Exhibit No. 68, marked page 2031.)

2032 DEFENDANTS' EXHIBIT No. 69.

10-4-11.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

Des Moines Gas Company.

Note of Gas Sales for Twelve Months to February 28th in Each Year 1907 to 1911.

Year Ended February 28, 1907	388,892,406
29, 1908	441,877,493
28, 1909	465,970,133
28, 1910	496,919,282
28, 1911	543,943,236
	2,337,602,550

2033 DEF'TS' EXHIBIT 74.

D. 74.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

Mistakes in Complainant's Exhibit #65.

1. Minor Errors:

A few minor errors in Table #1 are made, with regard to sale and miles of mains. This has come about with respect to sale in Cambridge, Lawrence and Lynn, and with respect to miles of mains in Lawrence, by not taking anything over one-half as the next higher figure. The number of meters for Cambridge is given as 26,590, when it should be 26,560.

2. Current Assets:

Serious mistakes are made with regard to current assets in Cambridge, Lawrence, Lowell and Lynn, as follows:

Current Assets.

Place.	Exhibit #65.	Corrected figures.
Cambridge	$284,864.62	$249,456.20
		720,680.48
Lawrence	749,411.37	262,695.40
Lowell	263,051.60	177,313.35
Lynn	236,046.67	113,755.98
Total	$1,533,374.26	$803,220.98

COPY BOU

In Cambridge there were included in current assets certain investments, doubtless outside the gas business, of $30,631.54, and for new work in process of construction, $4,776.88. The latter is more in the nature of permanent than of current assets.

The mistakes with regards to Lawrence grow out of the inclusion of an office building of $50,118.10 and of investments of $98.10 as current assets, and perhaps, also, in placing in the list of current assets a large amount of electric assets. A more correct apportionment of these assets is shown on another page.

2034 Lawrence, Mass., Gas Assets.

Fixed Gas Assets.

Real Estate	$209,209.71	
Machinery and Manufacturing Appliances	308,467.86	
Street Mains and Services	621,416.10	
New Work	457,985.02	
Meters	144,087.96	
Total	$1,741,166.65	$1,741,166.65

Some Current Gas Assets.

Due for Gas	$62,144.79	
Gas Coal	22,660.25	
Gas Coke	17,102.40	
Tar	9,308.70	
Ammonia	613.69	
Enrichers	3,563.84	
Purifying Materials	1,924.93	
Other Gas Materials	25,807.34	
Stoves	7,158.80	
Gas Fixtures, etc.	2,494.15	
	$152,778.79	152,778.79
Total of Fixed and some Current Gas Assets, as above		$1,893,945.44
Brought Forward		$1,893,945.44

D CLOSE IN CENTER

2035 Brought Forward.

Forward		$1,893,945.44

Fixed Electric Assets.

Real Estate	$24,048.81	
Steam Plant	76,766.26	
Electric Power Plant	543,665.25	
Electric Plant	253,034.73	
Electric Lines	341,180.85	
Transformers	33,812.69	
Electric Meters	40,956.36	
Arc Lamps	34,917.73	
	$1,348,382.68	$1,348,382.68

Some Current Electric Assets.

Due for Electric Light and Power	$37,143.04	
Fuel on Hand	2,414.67	
Carbons	1,323.61	
Oil and Waste	38.10	
Incandescent Lamps	5,865.22	
Globes on hand	492.74	
Motors on hand	11,280.38	
Other Electric Materials	17,930.70	
Total	$76,488.46	$76,488.46
Total Fixed and some Current Electric Assets		$1,424,871.14
Ratio of Gas Assets above to total Gas and Electric Assets above		57.07%

2036 Additional Items.

Office Building	$50,118.10	
Investments	98.10	
Total	50,218.20	$50,218.20
Other Assets		192,599.74
57.7 Per Cent of $192,599.74	109,915.67	
Some Current Gas Assets, Above	152,778.79	
Total Current Gas Assets	262,695.46	262,695.46
Total Used in Exhibit #65		$749,411.34

COPY BOU

Possibly the explanation of the difference may be in large measure due to including, in current gas assets, new work, of $457,985.02, instead of confusing gas and electric assets as previously suggested.

In any event, however, new work is not a current asset.

2037 In the case of Lowell, Exhibit # 55 includes as current assets $85,738.25 of investments, presumably outside of the gas business, while in the case of Lynn, an office building of $87,218.93 is included as current assets.

Since there are no such investments as the above in the Des Moines Gas Company, any inclusion of such investments in the Massachusetts companies is too favorable to the Des Moines Company. I included the permanent investments, (but not the Lawrence Electric assets) in tabulations on page 60 of my Report, although the inclusion of such office buildings and investments was unduly favorable to the Company; but in my rearrangement such as in Exhibit #65, it will be fairer to exclude them.

3. Meters and Services:

In Complainant's Exhibit #65, machinery and manufacturing appliances, mains and services are increased to conform to Professor Marks' unit costs. But if his figures are to be used, it should be observed that he depreciated his meters new by one-third, and his services by 50 per cent, to get the present value. This would reduce the total figure for mains and services, given in Exhibit #65, by $1,610,043.

4. Real Estate:

If the meters, services and mains are to be changed from the Massachusetts figures to those of Professor Marks, or unit costs, the real estate ought also to be changed. The real estate in the Massachusetts cities bought after those cities had attained considerable age and size, averaged $548,382.25, instead of about $100,-

2038 000 or less as testified by the City's experts in Des Moines or $200,000 claimed by the Company. A reduction of the real estate to an average of $100,000 for each of the seven Massachusetts companies would mean a total reduction of $3,138,675.75.

The total reduction from Complainant's Exhibit #65 would therefore be as follows:

Total Reduction from Complainant's Exhibit #65.

Current Assets	$730,153.27
Meters & Services	1,610,043.00
Land	3,138,675.75
Total	$5,478,872.02

If these reductions are made from the total assets of $17,689,-724.70, given in Exhibit 65, there would remain only $12,210,-852.68, or total assets of only $3.08 per 1000 ft. of sales, instead of $4.46 as given in the company's exhibit. Even if, for compari-

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son purposes, the land in each of the Massachusetts cities be valued at $200,000, as claimed by the company for Des Moines, the assets would only be increased by 17¢.

Furthermore, if all the new work that may have been classed as current assets were included, the addition would be only $462,761.90, or 12¢ per 1000 ft. of sales.

2039 D. 75.

Corrected Figures.

Page 92, Defendants' Exhibit 43.

Filed Apr. 5, 1912, Wm. C. McArthur, Clerk.

Some of the errors found were favorable to the Company, and some to the City, but one of the two points involved in the whole page, viz., the profits per thousand feet of sales that the Massachusetts companies are content with, is now found to be slightly more favorable to the City than the original figures, which were compiled in great haste merely for purposes of illustration. The corrected table follows:

Seven Massachusetts Companies for Five Years' Average Cost, Profit and Price.

Description.	Amount.	Per 1000 ft.
Sales	$16,929,868,846	
Manufacturing Cost	6,083,760.67	35.93
Other Costs	3,973,792.30	23.47
Total Operating Cost	10,056,852.97	59.40
Depreciation	545,472.78	3.22
Total Operating Expense & Depreciation	10,602,325.75	62.62
Profit from Operation	4,586,766.88	27.10
Price	15,189,092.63	89.72
Excess of Price above manufacturing Cost	9,106,031.96	53.79

Throughout the five years the typical companies have been content with a profit of 27.10¢ and with a margin between manufacturing cost and leakage on the one hand and price on the other hand of only 53.79¢.

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2040 DEFENDANTS' EX. No. 76.

D. 76.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

Margin Between Price of Gas on the One Hand and Manufacturing Expenses, Leakage, and Taxes on the Other Hand in Des Moines and in These Seven Massachusetts Companies.

Taking the actual receipts from gas in Des Moines, as given in Defendants' Exhibit #30, Exhibit B, and the actual expenses of operation as shown in Defendants' Exhibit page 5, we have the following:

Description.	Des Moines Gas Co. 1906-10.	Des Moines Gas Co. 1910.	Seven Massachusett Cos. 1906-10.	Seven Massachusett Cos. 1910.
Price	101.06¢	101.30¢	89.72¢	85.63¢
Manufacturing, Leakage and Taxes	41.86	38.33	42.17	39.50
Other expenses and Profits	59.20¢	62.97¢	47.55¢	46.13¢
Margin for Other Expenses and Profits with 90¢ sales in both Des Moines and Valley Junction	48.14¢	51.67¢	.....	.....

Sales.

	Des Moines Gas Co. 1906-10.	Des Moines Gas Co. 1910.	Seven Massachusetts Cos. 1906-10.	Seven Massachusetts Cos. 1910.
Total	2,292,034,290′	531,991,000′	16,929,868,846′	3,968,397,562′
Average.	2,292,034,290′	531,991,000′	2,418,552.692′	566,913,937′

2041 *Comparative Manufacturing Costs, Other Than Coal and Oil, of Fall River and Des Moines Water Gas Plants.*

1910.

Description.	Fall River.	Des Moines.
Manufactured	535,495,500′	556,132,721′
Repairs	0.918¢	2.55¢
Other Expenses aside from Coal & Oil	4.235	4.37
Total aside from Coal and Oil	5.153	6.92
Same Items for 1909	5.444	6.41

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2042 (DEFENDANTS' EXHIBIT No. 77, 10-4-11.)

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

Rate Regulation Expense.

Summary of Expenses, January 1 to August 31, 1911.

1. United Gas Improvement Co., p. 6		11,714.54
2. Accounts Payable:		
United Gas Improvement Co., p. 6	140.10	
Court Costs, p. 6	453.60	
W. A. Baehr, p. 6	8,180.00	
Henry I. Lea, p. 6	6,796.00	
W. W. Randolph, p. 6	5,000.00	
W. J. Hagenah, p. 7	1,546.00	
N. T. Guernsey, p. 7	1,500.00	
Hotel Chamberlain, p. 7	4,436.20	
J. G. White & Co., p. 10	224.50	
Storeroom, etc., p. 10	15.70	
General, p. 10	7,124.52	
		35,416.62
		47,131.16

COPY BOUN

Des Moines Gas Company.

Rate Regulation Expense—January 1 to August 31, 1911.

1. United Gas Improvement Company:

1911, Jan. 19.	5	14 x 17	Negatives @ $5.00	$25.00	
	5	"	Prints @	3.00	
	30	16 x 20	" @ .90	27.00	
27.	219	Large brown line prints	@ .08	17.52	
	222	Small " " "	@ .06	13.32	
					85.84
16.	Telegrams from J. B. Klumpp to J. Haines			2.10	
21.	Sharpening paper cutter knife			.40	
31.	Sundry suppers during month of January, 1911, for engineer's force			45.00	
				45.40	
	January expenses of W. F. Douthirt in connection with injunction against ordinance reducing price of gas			270.00	
	January expenses of G. W. Curran			211.50	
	" " " Thos. S. Genay			25.50	
	" " " F. N. Morton			8.10	
	" " " E. L. Heyser			3.00	
	" time of E. L. Heyser, draftsman			100.00	
	" " " W. E. Oberle, draftsman			60.00	
	" " & Expenses of W. F. Broadnax			136.75	
	" " " " E. P. Walter			229.50	
	" " " " E. S. Umstead			210.34	

	" " " "	W. Sturdevant	194.90	
	" " " "	G. W. Harrison	106.50	
	" " " "	W. F. Downs	100.50	
	" " " "	S. G. Elliott	82.50	
	Telegrams sent prepaid during January, 1911		42.15	
				1,828.44
February 28.	Mounting 5 photos—enlargements on muslin		.75	
	Call to phone #4303 Chicago, Ill., by Mr. Lewis Lillie		8.00	
	Labels	1.00		
	Iron Clamps	.40		
	Cutting & retopping brass posts and drilling holes in strips	.50		
	1 Drill and handle for same	.49		
			2.39	
	Expressage on package to New York		.30	
	" " " from Treasurer's Dept. to Jasen Haines, Des Moines		1.40	
	Lunches during month of Feb., 1911		34.50	
	6 Binders @ $3.25		19.50	
	500 Sheets of paper ruled		11.50	
	2000 " " commercial bond		20.00	
	4000 " " " "			
	Forward		98.34	1,914.28

1. United Gas Improvement Company: Forward				1,914.28
1911, Feb. 28, Forward			98.34	
Time of draftsmen working on maps:				
Jan. Replacement revaluation maps showing value of ground		2.00		
Paving map		3.00		
Checking miles of main		30.00		
Entering mains on street maps		1.50		
			36.50	
Feb. Corrections to street main maps		1.25		
Entering mains on trunk main maps		3.50		
" " for Des Moines replacement		2.50		
			7.25	
Services of stenographer 40 days at $3			120.00	
Telegrams sent repaid during February			32.80	
February expenses Messrs. Douthirt, Curran, Klumpp, Broadnax & Hemminger			608.20	
February expenses of T. S. Genay			16.40	
" " J. B. Klumpp			135.98	
" time and expenses of D. Cooley			65.45	
" " W. F. Downs			128.04	
" " E. L. Heyser			114.85	
" " E. M. Harrison			85.82	
" " S. G. Elliott			81.64	
" " E. S. Ulmstead			104.50	
" " W. Sturdevant			62.36	
" time of W. E. Oberle draftsman			38.57	
				1,736.70
" " & expenses of J. F. Wholley 86.02½				56.35

Telegrams prepaid during March, 1911		11.26	
Feb. Expenses of J. B. Klumpp		100.35	
March " " "		115.35	
" " " G. W. Curran		105.00	
" time and expenses of W. F. Broadnax		212.96	
" " " " " W. F. Downs		169.75	
" " " " " J. F. Wholley		154.94	
" " " " " D. Cooley		40.64	
" " " " " E. S. Umstead		89.06	
April " " " " W. F. Broadnax		139.65	
" " " " " W. F. Downs		155.50	
" time of E. L. Heyser, Draftsman		100.00	
April " " S. G. Elliott, "		60.90	
" " " G. M. Harrison, "		69.30	
" expenses of G. R. Hemminger		170.50	
Six 14" x 20" Prints mounted @ 80¢		4.80	
Expressage on package consigned to Baehr & Lea Chicago, Ill. from Sept. of Third Vice Pres	.35		
Expressage on package to W. W. Randolph NewYork City from above Dept	.30		
Expressage on package consigned to J. B. Klumpp from above Dept.	.60		
Screws and ferrule, etc	3.59		
		4.84	
Forward		1,704.80	5,643.20

1. United Gas Improvement Company: Forward				**5,643.20**
1911, April: Forward			1,704.80	
Making 8 leather binders		**26**		
" 8 set fly leaves lettering, etc		**8.20**		
			34.20	
Time & material, etc., four boxes for shipment of books			13.72	
4000 Blanks two forms (63787)			12.00	
Expressage			5.95	
				1,770.67
May 31. 2 black line prints (mounted)		3.36		
10 " " "		16.02		
			19.38	
Repairs to typewriter			.70	
16 small brown line prints 6¢		.96		
32 large " " " 8¢		2.56		
8 brown line prints 42" x 72" mounted		20.16		
			23.68	
3 doz. ferrules 1½" long 3.00; 3 doz. 2" long 3.00			6.00	
2 negative of Des Moines Cuves			.73	
2 brown line prints mounted			5.04	
1-10 yd. roll 36" #120 blue print paper			.80	
2 " " " " " " " "			1.60	
4–14" x 17" negatives at 5.00		20.00		
32–14" x 20" prints on muslin 90¢		28.80		
			48.80	
15 brown line prints at 6¢		.90		
Making one fly leaf		.15		
			1.05	

May.	Time of G. M. Harrison	21.77		
May.	" " H. H. Hewitt	24.20		
"	" " H. H. Baker	24.19		
"	" " S. G. Elliott	50.80		
"	" and expense of E. L. Heyser	127.08		
"	" " " " G. R. Heminger	343.25		
"	" " " " H. L. Siddell	7.75		
			599.04	
				706.82
June 30.	June, time and expense of W. F. Downs	128.50		
"	" " " " G. M. Harrison	14.00		
"	" " " " E. L. Heyser	89.33		
"	" " " " S. G. Elliott	54.75		
"	" of H. A. Baker	7.50		
"	" " H. L. Sidell	6.00		
"	" " H. H. Hewitt	5.00		
				305.08
	350 brown line prints (large) at 8¢ ea		28.00	
	310 " " " (small) " 6¢ ea		18.60	
	Screws, screw posts, etc		4.28	
	Making 9 black leather binders	29.25		
	" 10 prs. fly leaves	1.25		
	Lettering 10 binders	4.00		
			34.50	
	2 brown line prints mounted 42 sq. ft. at 12¢	5.04		
	1 ream 2½ wove paper	4.20		
			9.24	
	Telegrams sent prepaid during month		23.01	
	April expenses of J. B. Klumpp		148.30	
	Forward		265.93	8,425.77

1. United Gas Improvement Company: Forward		$8,425.77
1911, June 30: Forward	265.93	
May expenses of J. B. Klumpp	142.65	
May time and expenses of W. F. Downs	141.00	
June Expenses of G. R. Hemminger	9.00	
		558.58
20—14″ x 20″ Prints, mounted on muslin @ 80¢	16.00	
Expressage on packages, lunches, etc	7.20	
June Expenses of W. F. Douthirt	80.00	
		103.20
July 31:		
20—14″ x 20″ Prints, mounted on muslin @ 80¢	16.00	
2 Brown line prints (Des Moines) 42 sq. ft. @ 7¢	2.94	
Call to phone Cl. 3020 New York, Mr. Vincent	1.00	
12 Brown line prints, 165.6 sq. ft. @ 7¢	11.59	
12 " " " (Map) 25.2 " " @ 7¢	1.77	
12 " " " 84. " " @ 7¢	5.88	
Rental of Brunsviga Machine #6698 May 30th to June 30th	10.00	
48 Keystone Binders for sheet 11 x 8¼ @ $24. per doz.	96.00	
50 sheets #55 Black carbon paper 18″ x 24″	2.80	
12 Brown line prints (Des Moines curves)	4.62	
Expressage, etc.	.98	
Making and Delivering white pine box	4.65	
Telegrams prepaid during month	33.86	
Services of Miss Richter June 14th to July 6th	56.00	
June time of Ralph Knapp	11.67	
July time of S. F. Bonnett	3.87	
July " " J. V. G. Postles	3.87	

" " " J. H. Talley		13.55	
" " " G. M. Harrison		9.68	
" " " E. L. Heyser		63.87	
" " " H. H. Hewitt		4.84	
" " " W. F. Downs		75.00	
" " " H. L. Siddell		7.74	
" Expenses of E. P. Walter		74.00	
" Time & Expenses of W. H. Wholey		98.51	
" Time & Expenses of W. H. Taylor		382.65	
		997.34	
Less Credit		10.00	
			987.34
(Standard Blue Print Co. refund of overpayment.)			
August 31:			
1 Negative	.56		
1 Box for returning vouchers	.75		
		1.31	
July expenses of W. F. Downs		65.00	
" " " G. W. Curran		153.94	
" " " E. L. Heyser		101.50	
" time & Expenses of G. R. Hemminger		422.95	
August Expenses of J. H. Smith		130.84	
July & August time of E. P. Walter		109.96	
July & August Expenses of J. B. Klumpp		341.20	
			1,326.70
Forward			11,401.59

THIS PAG

	1. United Gas Improvement Company: Forward		11,401.59
1911, Aug.	Expressage	2.20	
	Telegrams prepaid during month	35.34	
	August expenses of G. W. Curran	126.00	
	" " " E. G. Windle	6.60	
	" Time & Expenses of W. F. Downs	158.81	
			328.95
			11,730.54
	Deduct:		
June 30.	Bill entered in month of June for 20—14" x 20" prints mounted on muslin @ 80¢		16.00
			11,714.54
	2. Accounts Payable:		
	1. U. G. I. Co.:		
1910, Dec. 31.	Prints		3.60
1911, Jan. 31.	140—10/12 Prints		70.00
Mar. 6.	23 Prints		10.70
May 31.	Photographic Work		34.00
June 30.	"		21.80
			140.10
	2. Courts' Costs:		
1911, Jan. 4.	Wm. C. McArthur, Clerk	26.10	
Mar. 6.	"	127.50	
May 23.	Court Expenses	300.00	
			453.60

	3. Wm. A. Baehr:			
1911, Mar. 30.	On account of services		2,500.00	
June 7.	"		2,500.00	
Aug. 15.	"		2,500.00	
31.	10 days' time W. A. Baehr @ $100	$1,000		
	112 days' do. @ $50	5,600	680.00	
	Expenses for help, traveling and hotel at actual cost	1,580		8,180.00
		8,180		
Less:	Cash to date	7,500		
	4. Henry I. Lea:			
1911, Jan. 16.	On account of services		100.00	
18.	"		200.00	
Feb. 2.	On account of services during Jan	1,700		
	Exp. " "	96		
		1,796		
	Less Paid on A/c	300		
			1,496.00	
Mar. 13.			1,000.00	
Apr. 19.			1,000.00	
June 5.			1,000.00	
July 6.			1,000.00	
Aug. 16.			1,000.00	
				6,796.00
	5. W. W. Randolph:			
1911, Aug. 5.	On account of services			5,000.00
	Forward			20,569.70

THIS PAG

Rate Regulation Expense—Continued.

2. Accounts Payable: Forward				20,569.70
	6. W. J. Hagenah.			
1911, Aug. 1.	Services Auditing Accounts, reports and expenses to July 1		1,000	
	Do. and expenses for month of July		546	
	7. N. T. Guernsey			
	1911, May 10: Retainer Fee			1,546
	8. Hotel Chamberlain.			1,500
1911, Feb. 1.	W. L. Brown, Hotel Sundries, expense of experts and officials of Company and of U. G. I. Co		152.40	
M'ch 1.	"		430.20	
Apr. 1.	"		871.25	
May 1.	"		274.45	
" 31.	"		90.25	
June 30.	"		170.00	
July 31.	"		1,189.30	
Sept. 1.	"		1,258.35	
				4,436.20

9. General:

1910, Dec.	31.	Koch Bros. Ptg. Co. 300 Guide Cards	1.20	
1911, Jan.	16.	Jansen Haines, Expenses to Council Bluffs & to Chicago	158.40	
"	15.	Pay Roll, Special Clerks, etc	231.52	
	23.	B. F. Kauffman, Services Real Estate Appraisal	100.00	
"	31.	Pay Roll, Labor, Special Clerks, etc	21.25	
	"	Jansen Haines, Expenses to Chicago, Jan. 24 & 25	92.60	
	12.	American Surety Co. Prem. on Court Bond	500.00	
	31.	Pay Roll: Labor	27.08	
	"	Petty-Cash	17.90	
	"	Baker-Trisler Co. Supplies	5.20	
	16.	Iowa Pub. Co. 3 Maps C. of D. M	4.50	
	5.	Perkins Elec. Co. 4 lamps flash	2.00	
	31.	Telegrams	31.30	
	5.	Smith-Premier Type Co. paper	5.93	
	31.	F. J. Wells Livery Co. Auto hire	2.00	
	"	Younker Bros. framing pictures	3.75	
Feb.	8.	4 Rubber stamps	.40	
Jan.	31.	Toll Service	8.65	
Feb.	16.	G. J. Vincent, Exp. to Chicago, 10-11 & 12	71.10	
	15.	Pay Toll, Labor	4.73	
	23.	A. G. Newbell, services	25.00	
	28.	Stamps, mailing booklets $420, Express, etc. $36.10	456.10	
	"	Pay Roll Labor	109.33	
	"	Baker-Trisler Co. Supplies	4.80	
	24.	Chase & West Table	16.20	
		Forward	1,900.94	28,051.90

		2. Accounts payable: Forward		28,051.90
		9. General: Forward	1,900.94	
1911, Feb.	14.	S. Davidson & Bros., Desk, screen, etc	35.30	
"	25.	D. M. Stationery Co., typ. paper	4.90	
"	6.	Garver Hdw. Co. 1 tape line	3.50	
"	25.	Toll Service	6.40	
"14-24.		Largan Bros. Co. Supplies	10.35	
"	28.	Telegrams	17.92	
"	22.	Smith Premier Co. Tpw. paper	14.31	
"	22.	Younker Bros. 2 rugs	104.00	
"	22.	Stenographic work 4.00 6.00 6.00	16.00	
"	22.	S. Davidson & Bros. table & Seat	40.00	
M'ch	1.	D. M. Realty & Sec. Co. Rent Rooms 403-409-410	48.83	
"	8.	Jansen Haines Expenses to Chicago with Mr. Guernsey	66.00	
"	1.	Heilhecker Pub. Co. 23 M Books, 23 M envelopes	886.59	
"	15.	Carr, Carr & Evans, Expenses & outlays	68.52	
"	15.	Payroll, Labor	42.50	
"	31.	" "	42.50	
"	31.	Petty-Cash	39.40	
"	31.	Baker Trisler Co. supplies	27.90	
"	31.	S. C. Burrows Stenographic work	42.00	
"	6-20.	D. M. Stationery Co.	7.30	
"	28.	Iowa Publishing Co. prints & Negatives	13.84	
"	25.	Toll service	2.40	
"	31.	Telegrams	23.88	
"	23.	B. F. Swanson Co. rent twp. writer	2.50	
"	31.	Tuttle's Letter Shop, 430 copies gas statistics	2.50	
"	27.	Della Wolf Stenographic work	58.60	

" 15.	Chas. W. Malotte & Co. for binders	17.10	
Apr. 14.	Ronald Press Co. copy Dicksee's Auditing	5.00	
" 14.	Spon & Chamberlain, Mathersons' Depreciation	4.00	
" 14.	Telegram	4.93	
" 12.	John W. Alvord, Chicago, Services, Consultation $150.00 Expenses 19.70.	169.70	
" 1.	D. M. Realty A Sec. Co. Rent	35.00	
" 1.	Della Wolf Stenographic work	8.55	
" 24.	J. Haines, expenses to Chicago	83.30	
" 30.	Pay roll labor	27.50	
" 30.	" " "	21.89	
" 30.	J. Haines Expenses to Chicago	131.67	
" 1.	Blaise & Blaise, Services taking testimony of witnesses, Feb. 22 to M'ch 1	222.15	
M'ch 10.	Luella Nash Sten. work	4.80	
Apr. 30.	Telegrams	32.45	
" 29.	Trisler's supplies	2.50	
May 1.	D. M. Realty & Sec. Rent	35.00	
" 15.	Pay roll labor	27.50	
Feb. 13.	S. Davidson & Bros. Furniture	47.00	
	Forward	4,408.92	28,051.90

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	2. Accounts Payable: Forward			28,051.90
	9. General: Forward		4,408.92	
1911, Mar. 24.	S. Davidson & Bro. Furniture		69.70	
May 31.	Payroll Labor		27.50	
" "	" "		.30	
" 8.	Smith Premier Typ. Co. Supplies		7.12	
June 1.	D. M. Realty & Security Rent		35.00	
May 31.	Telegrams Postal Co		15.59	
" 27.	Woods Studio Photos		10.00	
June 15.	Payroll Labor		27.50	
" 17.	John A. Alvord services. Consultations $250 exps. $1.89		251.89	
" 30.	Payroll Labor		27.50	
" 30.	Expenses		.45	
July 1.	" G. I. Vincent to Phila. 6/4 to 7/1 1911		115.10	
May 29.	Std. Blue Print Co. blue prints		2.94	
July 1.	Hatton McCutcheon, Real Estate Expert, services		25.00	
" 1.	D. M. Realty & Security Co. Rent		35.00	
" 1.	Telegrams		42.54	
" 1.	Wilkinson Bros. & Co. 15,000 sheets 8½ x 11 paper		20.25	
" 15.	Payroll Labor		47.50	
" 18.	Jansen Haines' expenses		176.50	
June 29.	Callaghan & Co. Pub. Serv. Corp. 2 Vols		12.50	
July 15.	Pay roll Labor		2.00	
" 25.	Hatton McCutcheon, real estate expert, services		50.00	
" 31.	Pay roll Labor		48.50	
" 31.	Jansen Haines, expenses to Chicago $38.70, expenses in D. M. $76.40		115.10	
" 31.	Pay roll Labor		74.31	
" 31.	" "		36.90	

"	31.	Jansen Haines' Sundry expenses $179.75 and exps. to Chicago $55.00....	234.75	
"	11.	Chase & West one bookcase.....	39.00	
"	5.	Citizens' Elec. Co. 2—12" fans.....	27.00	
"	7.	" 1—12" fans.....	17.00	
"	11.	" 2—12" fans.....	27.00	
"	12.	" 1—16" fans.....	15.50	
"	13.	" 4—12" fans.....	54.00	
"	31.	D. M. Statny. Co. supplies.....	4.00	
"	24.	E. Side Carpenter Shop 7 window screens.....	9.60	
"	13.	Iowa Publishing Co. 6 maps.....	3.00	
"	20.	Lang Bros. 2 baskets.....	4.85	
"	8.	Midland Elec. Co. 1 reading lamp.....	5.00	
"	31.	McNamara & Kenworthy Co. supplies.....	17.80	
"	31.	Telegrams	32.85	
Aug.	1.	J. H. Welch Printing Co. supplies.....	11.75	
July	13.	The Blackstone 1 Vacuum Carafe.....	6.00	
		Forward.....	6,194.71	28,051.90

	2. Accounts Payable: Forward			28,051.90
	9. General: Forward		6,194.71	
1911, July 19.	Callaghan & Co. Pub. Serv. Cop		12.50	
" 8.	F. H. Flood & Co. 5 Dillon on Muncipal Corps		32.50	
" 12.	Geo. W. Nock Co. 4 Keys		.40	
" 21.	Wilkinson Bros. & Co. 15 A. A. Sheets paper		20.25	
Aug. 1.	D. M. Realty & Security Co. Rent		101.65	
" 15.	Payroll Labor		27.50	
" 12.	G. W. Curran expenses trip to Chicago		62.85	
July 8.	Telegrams		1.26	
Aug. 15.	Payroll labor		32.50	
" 1.	Chase & West desk $22.50, chair $18.00		40.50	
" 9.	Hatton McCutcheon, Agency services		32.00	
" 14.	H. M. Byllesby Co. services as expert witness on financing of public utility cos. $1.00 expenses $35.05		135.05	
" 1.	Dr. Eli Grimes, professional services		13.00	
" 1.	Dr. James T. Priestley		5.00	
" 26.	Geo. A. Green expenses		18.00	
" 31.	Payroll labor		27.50	
" 16.	W. F. Brodnax services as Engineer		225.00	
" 31.	Payroll labor		32.50	
" 31.	" "		45.28	
" 2.	Iowa Publishing Co. mtg. 2 maps		.85	
" 25.	Toll service		10.20	
" 31.	McNamara & Kenworthy Co. paper		5.10	

" 21 to 30.	Remington Teypewriter Co. paper	11.50	
" 11 to 24.	Smith Premier Typewriter Co. paper	16.42	
" 18 to 28.	Underwood Typewriter Co. Rental	3.00	
July 31.	Wood's Photo Studio Negatives and prints	17.50	
			7,124.52
			35,176.42
10. Storeroom: Material January 31, 1911		.74	
Expense Storeroom January "		.07	
" Stable " "		7.34	
" " July 31 "		7.55	
			15.70
11. J. G. White & Co.			
1911, July 25.	Exps. W. F. Brodnax July 3 to 25th, San Francisco to D. M. and return		224.50

THIS PAGE VERTICAL

2054 DEFENDANTS' EXHIBIT No. 79.

10/14/11.

D. 79.

Capital City Gas Light Company.

Authorization of Improvements and Repairs.

Requisition No. 511. Date 11–13–1901.

Subject: Holder. No. 460.

9–23–1902.

Mr. E. G. Pratt, Mgr.

DEAR SIR: Your requisition of the above number has been received and the expenditure you recommend is approved by the Works Committee. You are hereby authorized to proceed with the work as follows:

To erect one 1,000,000 cu. ft. holder in steel tank, including inlet and outlet connections.

(Work to be under G. R. Roberts' Contract No. 52.)

Estimated Cost.

For the above ..... ——

Annual Estimate 1902.
(We will order.)

Amount authorized.

Compare this authorization with your requisition.
Work to be charged to account, Holder.
This account to be closed into, Improvement account.
(Signed) "THOS. S. GENAY,"
Chief Clerk General Sup't's Department.

Filed Apr. 5, 1912. Wm. C. McArthur, Clerk.

2055 Capital City Gas Light Company.

Authorization of Improvements and Repairs.

Requisition No. 544. Date 9–22–'02.
Subject: Governor. No. 467.

2–10–1903.

Mr. Jansen Haines, Mgr.

DEAR SIR: Your requisition of the above number has been received and the expenditure which you recommend is approved by

E BOUND
. IN BOOK

the Works Committee. You are hereby authorized to proceed with the work as follows:

Enlarge works outlet and install new 4" street main governor. (Annual Estimate 1903.)

Estimated Cost.

For the above ..... ——

(Closed into G. J. Roberts' Contract No. 52.)

Amount authorized.

Compare this authorization with your Requisition.
Work to be charged into account—Governor.
This account to be closed into—G. J. Roberts' Contract No. 52. acct.

(Signed) "THOS. S. GENAY,"
Chief Clerk General Sup't's Department.

2056 & 2057 Capital City Gas Light Company.

Authorization of Improvements and Repairs.

Requisition No. 504. Date 11-13-1901.

Subject—Water Gas, Apparatus, etc. No. 439.

2-12-1902.

Mr. Jansen Haines, Mgr.

DEAR SIR: Your requisition of the above number has been received and the expenditure you recommend is approved by the Works Committee. You are hereby authorized to proceed with the work as follows:

To install one set of water gas apparatus, 8' 6", one 125 H. P. boiler, complete, an present house, increase oil storage by erecting one 100 M gal. tank and connections, also re-locate oil pumps in new isolated brick oil house.

(Annual Estimate 1902.)

Estimated Cost.

For the above ..... ——

(We will order.)

(Work to be done under G. R. Roberts' Contract No. 37.)

Amount Authorized.

Compare this authorization with your requisition.
Work to be charged to account—Water Gas, Apparatus, etc.
This account to be closed into—G. J. R. Contract No. 37 account.

Unsigned.
Executive Clerk.

Initials.

Form No. 222.

DES MOINES GAS COMPANY

DES MOINES, IOWA

Defendants Ex. No. 83
11/14/11.

To Blaise & Blaise.
City.

Order No. 5/602

DATE			ACCOUNT
1911. April 1	To services, taking testimony of witnesses on Feb.22-23-24-25-26-27 Mch 1 = 7 days,	56.00	
	To transcript Mr Lea's testimony, 106 pp.2 carbons,	42.40	
	To transcript Mr. Brodnax testimony 86 pp.2 carbons,	38.70	
	To transcript Mr. Baehr " 73 pp.2 carbons,	32.85	
	" transcript Mr. Hagenah " 62 pp.2 carbons	27.90	
	" transcript Mr. Moul " 54 pp.2 carbons,	24.30	$222.15 Rate Reg.Ex
			ASC WMcK

FILED
APR 5 1912
Wm C. McArthur
Clerk

PAID BY CHECK No 7743 MAY 18 1911 ON IOWA NATIONAL BANK

APPROVED:

CORRECT: G. I. Vincent MANAGER. W. B. Keffer. Engr. ASST. TREAS. S.

CORRECT: ..... PURCHASING AGENT.

PAYMENT APPROVED: ..... TREASURER.

RECEIVED May 23rd 1911 FROM DES MOINES GAS COMPANY

Two hundred twenty-two & 15/100 DOLLARS IN FULL FOR ABOVE BILL.

$ 222.15

Blaise & Blaise
Per J. P. Blaise.

2059

THIS PAGE BOUND VERTICAL IN BOOK

2058 DEFENDANTS' EXHIBIT No. 82.

11-14-'11.

Filed Apr. 5, 1912. W. C. McArthur, Clerk.

4-11-1911.
G. H. C.

DES MOINES, IOWA, *April* 1, 1911. *190–*.

M Des Moines Gas Company, City, in Account with Blaise & Blaise, General Stenographers, 802 Fleming Bldg.

M Mutual Phone 573.

(478)

(1123)

O. K., J. H.
4-21-'11.

To services, taking testimony of witnesses on Feb. 22-23-24-25-26-27 M'ch 1—7 days								56.00
To transcript Mr. Lea's testimony, 106 pp. 2 carbons								42.40
"	"	Mr. Brodnax	"	86	"	"	"	38.70
"	"	Mr. Baehr	"	75	"	"	"	32.85
"	"	Mr. Hagenah	"	62	"	"	"	27.90
"	"	Mr. Moul	"	54	"	"	"	24.30
								$222.15

Rate Regulation Exp.
Received payment, (154)

(Here follows fac-simile, marked page 2059.)

2060–2167 In the District Court of the United States for the Southern District of Iowa, Central Division.

No. 71-M. In Equity.

DES MOINES GAS COMPANY, Complainant,
vs.
CITY OF DES MOINES et al., Defendants.

Clerk's Certificate to Part Three (3) of Transcript.

UNITED STATES OF AMERICA,
Southern District of Iowa, ss:

I, Wm. C. McArthur, Clerk of the District Court of the United States for the Southern District of Iowa, and as successor in office of the Clerk of the Circuit Court of the United States for said District and State, hereby certify the foregoing, designated as part three of the transcript (Appellant's exhibits pages 1 to 894 inclusive; Appellees' exhibits pages 895 to 2167 inclusive; Appellant's exhibits consisting of 55 separate exhibits numbered 5-6-15-16-17-18-19-20-21-22-23-24-25-26-27-28-29-30-31-32-33-34-35-36-37-38-40-41-42-43-44-44A-45-46-47-56-59-64-65-65 A-69-72-73-77-83-84-85-86-87-88-89-90-91-92-and 93; Appellees' exhibits consisting of 51 separate exhibits numbered 2-3-5-6-8-9-10-11-18-22-23-24-(same as 41 of Appellant's) 25-26-27-28-29-30-31-33-34-38-39-40-41-42-43-44-48-51-53-54-59-67-68-69-74-75-76-77-78-79-81-82-83-84A-84B-84C-84D-84E- and 84F) to be a full, true and complete copy of all exhibits, save such as are read into the record and enumerated in the index to this transcript, as called for in the Appellant's præcipe and the Appellees' præcipe for a transcript in the cause numbered 71-M Des Moines Gas Company versus the City of Des Moines, Iowa, et al. lately pending in said District Court of the United States for the Southern District of Iowa as successor of the Circuit Court of the United States
2168 for said District and State, as full, true and complete as the originals thereof now on file and of record in my office in the City of Des Moines in said District. Appellant's exhibits Nos. 17, 18, and 19 (large maps) in separate package.

In testimony whereof, I have hereunto set my hand and affixed the seal of said Court at my office in the City of Des Moines in said District this 30th day of November A. D. 1912.

[Seal U. S. District Court, Southern District of Iowa.]

W. C. McARTHUR,
Clerk as Aforesaid.

2169 In the District Court of the United States for the Southern District of Iowa, Central Division.

No. 71-M. In Equity.

DES MOINES GAS COMPANY, Complainant,
vs.
CITY OF DES MOINES et al., Defendants.

Clerk's Certificate to Entire Record.

UNITED STATES OF AMERICA,
Southern District of Iowa, ss:

I, Wm. C. McArthur, Clerk of the District Court of the United States for the Southern District of Iowa and as successor in office of the Clerk of the Circuit Court of the United States for said District and State, hereby certify the foregoing, designated as parts, One, Two and Three, consisting of 7,720 pages, to be a full, true and complete copy of the record as designated in writing by the Appellant and Appellees in a cause lately pending in the District Court of the United States for the Southern District of Iowa, as successor of the Circuit Court of the United States for said District and State, numbered 71-M Equity, Central Division, entitled Des Moines Gas Company versus City of Des Moines, et al., as full, true and complete as the originals thereof, now on file and of record in my office in the City of Des Moines in said District.

I further certify that I transmit herewith as a part of said record the original Citation with acceptance of service thereof.

In testimony whereof, I hereunto set my hand and affix the seal of said Court at my office in the City of Des Moines in said District this 30th day of November A. D. 1912.

[Seal U. S. District Court, Southern District of Iowa.]

W. C. McARTHUR,
Clerk as Aforesaid.

Endorsed on cover: File No. 23,459. S. Iowa D. C. U. S. Term No. 397. Des Moines Gas Company, appellant, vs. City of Des Moines et al. Filed December 14, 1912. File No. 23,459.

Office Supreme Court, U. S.
FILED.
DEC 14 1912
JAMES H. McKENNEY,
CLERK.

IN THE

SUPREME COURT OF THE UNITED STATES

OCTOBER TERM, A. D. 1912.

NO. ~~804~~ 397 75

DES MOINES GAS COMPANY,
Appellant,
vs.
CITY OF DES MOINES, JAMES R. HANNA, JOHN MAC VICAR, CHARLES W. SCHRAMM, JOHN WESLEY ASH, ZELL G. ROE and ROBERT O. BRENNAN,
Appellees.

Appeal from the District Court of the United States for the Southern District of Iowa.

APPLICATION FOR AN ORDER TO MAINTAIN THE STATUS QUO, AND TO ENJOIN THE DEFENDANTS FROM PUTTING INTO EFFECT THE ORDINANCE RATES IN CONTROVERSY, PENDING THIS APPEAL.

GEORGE H. CARR,
WILLIAM L. READ,
NATHANIEL T. GUERNSEY,
Solicitors for Des Moines Gas Company.

Geo. Hornstein Co., Printer, Chicago.

IN THE

Supreme Court of the United States

OCTOBER TERM, A. D. 1912.

NO.....

DES MOINES GAS COMPANY,
Appellant,
vs.
CITY OF DES MOINES, JAMES R. HANNA, JOHN MAC VICAR, CHARLES W. SCHRAMM, JOHN WESLEY ASH, ZELL G. ROE and ROBERT O. BRENNAN,
Appellees.

Appeal from the District Court of the United States for the Southern District of Iowa.

Application for an order to maintain the status quo, and to enjoin the defendants from putting into effect the ordinance rates in controversy, pending this appeal.

Now comes the Des Moines Gas Company, appellant, and makes this, its application for an order which shall maintain the *status quo* pending this appeal by enjoining and restraining the appellees from attempting to put into effect or to enforce, pending this appeal, the rate for gas sought to be established by the ordinance in controversy in this suit.

In support hereof the appellant states the following reasons and facts:

First: The Des Moines Gas Company, hereinafter referred to as the Company, is a corporation created and existing under the laws of the State of Iowa; and is, and was at all of the time hereinafter mentioned, the owner of a gas plant in the City of Des Moines, Iowa, and engaged in the business of manufacturing, distributing and selling gas for general use in said city.

Second: That the appellee, the said City of Des Moines, hereinafter referred to as the City, is and was at all of the times hereinafter mentioned, a municipal corporation created and existing under the laws of the State of Iowa; and was in the year 1910 and still is authorized by the laws of said State to regulate and fix the price at which gas shall be sold in said City.

Third: That during the years 1906 to 1910 inclusive the Company charged for the gas manufactured and sold by it in said City at the net rate of $1.00 per 1,000 cubic feet.

Fourth: **December 27, 1910**, there was introduced in the council of said City an ordinance fixing the price to be charged for gas sold in said City at 90 cents per 1,000 cubic feet on and after January 1, 1911, which ordinance required the Company to also pay to the City a license or occupation fee of 2 per cent. of its gross receipts, and provided severe penalties for its violation.

December 27, 1910, the day it was introduced, said ordinance was passed by said council, and approved

by the mayor of the City. A copy of said ordinance is found at page 129 of the special master's report and is printed commencing at page 1 of the appendix hereto.

December 29, 1910, the appellant filed its bill in the United States Circuit Court for the Southern District of Iowa (by operation of law the suit was later transferred to the United States District Court for the said district), alleging that the enforcement of the rate fixed by said ordinance would confiscate its property, and would result in depriving it of its property without due process of law and in denying it the equal protection of the laws, setting up and claiming the benefits and immunities of the Fourteenth Amendment to the Constitution of the United States, and praying that the said ordinance be decreed void, and that the City and its officers and agents be enjoined from enforcing it.

December 31, 1910, upon the Company's application the court below entered an order restraining the enforcement of the ordinance in controversy pending an application for a temporary injunction.

January 6, 1911, upon the Company's application, the court below granted a temporary injunction, restraining the enforcement of the ordinance in controversy, and providing for charging the old rates pending the final disposition of the suit. The Company filed the bond provided for and continued to charge the old rates. A copy of this order is set out in the appendix hereto at page 4.

May 16, 1911, the case was referred to Honorable Robert Sloan, special master, to hear the evidence and report his conclusions of law and fact.

April 5, 1912, the special master filed his report, a certified copy of which is filed herewith, which contained among others the following findings of fact and conclusions of law:

(a) That the cost of reproducing the physical property of the Company used and useful in its business of manufacturing and distributing gas in the City (report, p. 39), after deducting depreciation, was $2,240,928

(b) That this included on account of appreciation in the value of mains because of paving over them after they were laid, $140,000, which should be disallowed (report, pp. 40-42), leaving as what the special master called the physical value..... $2,100,928

(c) That the element of "going value," defined by the special master as "that enhancement which results from a well developed and paying business" (report, p. 121, line 19) amounted to (report, p. 44, line 26) ..... $ 300,000

Total in round figures was (report, p. 115) $2,400,000

(d) That the Company is entitled to earn a return of 8 per cent. upon the value of its property, used and useful in its business of manufacturing and distributing gas, and that this would be relatively less, in view of the differences in local conditions, than the return of six (6) per cent. approved by this court in *Willcox* v. *Consolidated Gas Company*, 212 U. S., 19, saying in this connection (report, p. 64, line 19):

> "And really, under the circumstances, six per cent. of return therein would be a greater return accordingly than eight per cent. in the plant and business of the complainant herein."

(e) That at the proposed 90 cent rate the Company would not, according to the estimates of the special master, earn a fair return upon its investment during either of the years 1911, 1912, 1913 or 1914.

(f) In discussing the claim that a decrease of 10 cents per 1,000 cubic feet would increase the volume of the sales the special master said (report, page 88):

> "While a slight increase in consumption may result from a reduction of ten cents per M. C. F. in price, in my judgment, it is much more apt to result in an increase of customers, and the table in Schedule 4 very clearly shows it, in the increase thereof, in proportion to the inhabitants of the city, as shown by the first column on the right of the table."

He says further (report, p. 89):

> "It is clear to me that in the future the annual gain will largely depend upon the increase in population, and the erection of new residences, for their accommodation and consequently the extension of mains to accommodate them."

(g) That the Company was bound to establish each material matter of fact beyond a reasonable doubt.

(h) That (report, p. 119, line 31)

> "Should the court hold that the $140,000 for taking up and replacing mains [paving] where none existed at the time the mains were laid, then a decree for the complainant would be imperative should 'going value' be included in the basis for a return."

(i) That this court in *Cedar Rapids Gas Company* v. *Cedar Rapids*, 223 U. S., 655, held that

> "going value should not be considered in determining the basis upon which the complainant is entitled to have its return reckoned." (Report, p. 121, lines 1 to 23.)

(j) That the bill should be dismissed without prejudice as in the *Consolidated Gas Company* case. (Report, p. 121, line 29.)

August 21, 1912, the court below filed an opinion overruling the exceptions of the Company and the City to this report, and at the same time filed a final decree in the case, which dismissed the bill "with prejudice." A copy of this opinion is printed in the appendix beginning at page 9, and a copy of the decree beginning at page 22. Counsel were not afforded any opportunity to make any suggestions as to the form of this decree before it was filed.

October 8, 1912, the Company presented to the court below a request that the decree of August 21, 1912, be so modified as upon proper terms to relieve the Company, pending this appeal, from the obligation to repay to its consumers the amounts collected from them for gas after January 1, 1911, in excess of the 90 cent rate provided by the ordinance in controversy. A copy of this application is printed in the appendix commencing at page 24.

That said application did not include a request that the decree be further modified so as to permit the Company upon proper terms to continue to charge the $1.00 rate, pending this appeal, because it was believed by counsel for the Company that such

a request would be futile; and that no request for such a modification of its decree has been made to, or passed upon, by the court below.

October 10, 1912, the court below, the term at which said decree of August 21, 1911, was entered not having ended, entered its final decree in this suit as follows:

IN THE DISTRICT COURT OF THE UNITED STATES,
SOUTHERN DISTRICT OF IOWA,
CENTRAL DIVISION.

Des Moines Gas Company, *Complainant*,
against
City of Des Moines and others, *Defendants*.
No. 71-M.
Decree.

Now on this October 10th, 1912, the court being fully advised, orders and decrees:

The decree herein filed August 21st, 1912, be and the same is hereby vacated and in lieu thereof the following is ordered, adjudged and decreed:

1. The bill of complaint herein is dismissed with prejudice.

2. The complainant will pay the costs herein made to be taxed by the Clerk, which will include moneys paid by defendants on account of stenographers and typewriters, and moneys paid by defendants on account of Master's compensation and

expenses, for which, after forty (40) days, a writ of execution will issue.

3. The restraining order and temporary injunction heretofore issued herein are both vacated; such vacation to be effective on and after November 15th, 1912.

4. At any time on and after three years from this date, complainant, its successors or assigns, may on motion reinstate this case with all the pleadings and evidence now on file, with the same and like effect as though filed for such subsequent hearing. And each party may then file such additional pleadings and take and file such additional evidence as to each party may be deemed advisable.

5. If complainant elects to appeal from this decree or any part thereof, a *supersedeas* bond properly conditioned in the penal sum of five thousand ($5,000) dollars, with ample surety, will be approved; said approval to be by the Judge of this court; said bond when thus approved will stay the said writ of execution as to said costs as covered by paragraph 2 of this decree.

6. It is further decreed that the orders heretofore made as to refund of ten (10) cents per thousand feet of gas in excess of the rate fixed by the ordinance herein in controversy be superseded, providing the complainant file a bond for that purpose in the penal sum of one hundred and fifty thousand ($150,000) dollars, properly conditioned with ample surety, to be approved by this court or a Judge thereof.

7. Any other *supersedeas* than those provided for in paragraphs 5 and 6 of this decree is denied and

shall only be allowed by the Supreme Court of the United States or a Justice thereof.

8. In the event an appeal is not taken perfected and filed within sixty (60) days of the date hereof, or if said appeal is taken and this decree should be affirmed as to said refund as set forth in paragraph 6 of this decree, then the city and all parties claiming such refunds shall present such claims to this court within such time as will be hereafter fixed for allowance. And said city and all defendants and the officers and agents of such city and all persons are prohibited from presenting or urging the same in any other court than this court. And for such hearings this court retains jurisdiction over the parties and the subject matters. Each party excepts to all the foregoing insofar as adverse.

Done this October 10th, 1912.

(Signed) SMITH MCPHERSON,
Judge.

(Endorsed)

Filed October 10, 1912.

WM. C. MCARTHUR, *Clerk.*

UNITED STATES OF AMERICA,
SOUTHERN DISTRICT OF IOWA. } ss.

I, Wm. C. McArthur, Clerk of the District Court of the United States for the Southern District of Iowa, hereby certify that the above and foregoing is a full, true and complete copy of the decree filed October 10, 1912, in the above entitled cause, as full, true and complete as the original thereof now on file and of record in my office in the City of Des Moines, in said district.

IN WITNESS WHEREOF, I hereunto set my hand and affix the seal of said court this 4th day of November A. D. 1912.

WM. C. MCARTHUR,
Clerk as aforesaid.

(Seal)

Fifth: That the evidence presented to the special master showed the results of the operation of the Company's property for about twenty-five years preceding the hearing, and showed in minute detail the operating expenses and revenues for the five years preceding January 1, 1911.

That the special master to secure a basis for his estimates as to the results of the future operations of the Company's property made certain deductions from its actual operating costs.

These adjustments cover, speaking generally, three items: (a) rate regulation expense; (b) donations to various public organizations; (c) certain salaries paid to general officers of the Company residing in Philadelphia. It was the contention of the Company that these items should be allowed, the rate regulation expense to be spread over a period of years, so as to afford an average as a basis for future estimates; but this contention was overruled by the special master, and by the court below. It is our purpose merely to call attention to the fact that none of these items of operating costs are included in such costs taken by the special master as the basis of his estimates for the future.

The operating costs used by the special master in making his estimates of the results of the future operations of the Company were (1) the average actual operating costs of the Company for the five years preceding January 1, 1911, less the adjustments aforesaid, giving a net revenue of 20.75 cents per 1,000 cubic feet; (2) the actual operating costs for the first ten months of 1911, less the adjustments aforesaid, giving a net revenue of 21.60 cents per

1,000 cubic feet; (3) the actual operating costs of 1910, less the adjustments aforesaid, giving a net revenue of 20.35 cents per 1,000 cubic feet; and (4) the lowest actual operating costs of any of the preceding five years, giving a net revenue of 22.90 cents per 1,000 cubic feet. This estimated net revenue is in each instance based on the proposed 90 cent rate.

The special master, as a further basis for the determination of said future results, estimated the probable future sales of the Company for each of the years 1911 to 1914 inclusive. Bearing upon this question there was shown by the proof the detailed history of the operations of the plant from the year 1886 down to the date of the hearing. A part of this information is shown by "Exhibit E," hereto, giving the population of the city, the annual sales, the annual increases in sales, the number of meters, the sales per meter, the sales per capita and the population per meter for each of the years 1895 to 1910 inclusive. These statistics afford a basis for determining the effect upon the volume of sales of decreases in rates, as, during this period the rate was decreased from $1.30 to $1.00 per 1,000 cubic feet, by gradual steps.

The significant things appearing from Exhibit E, as to future sales, are (1) that the sales per meter have not substantially increased either with decreases in rates or with increase in population; but (2) that the population per meter has radically decreased, showing that the increased volume of sales has been due to new consumers and not to increased sales to old consumers.

The population of 4.50 per meter shows substantially one meter in every family and affords the

basis for the special master's statement that substantial increases in sales must in the future come from increases in population.

The special master, however, in making his estimates, assumed normal increases in sales, as shown by the third column in Exhibit A, and all of his estimates are based upon these, or substantially these, figures as to sales. The diagram, Exhibit I, shows the special master's estimates of future sales graphically. The years appear at the bottom of the diagram, and the volume of sales is represented by the perpendicular line at the right. The diagonal line represents the actual sales from 1895 to 1910 inclusive, and its projection as a broken line, marked "master's estimate," shows the sales as estimated by the special master for the years 1911 to 1914 inclusive.

The detailed estimates of the special master, supporting our general statement (division fourth, section 2 *supra*), that he found that the 90 cent rate would not afford a fair return, with reference to the pages and lines in his report, are as follows:

(1) Estimates based upon a net revenue of 20.75 cents per 1,000 cubic feet of gas sold, founded upon the results of the average actual operating costs for five years, adjusted by the special master.

RATE	NET RETURN	DEFICIT	
.90	$108,208.50 (l. 6, p. 75)	$83,791.50	
.90	120,350.00 (l. 27, p. 107)	72,799.00	(l. 30, p. 107)
.90	125,537.50 (l. 11, p. 109)	77,192.56	(l. 12, p. 109)
.90	132,385.00 (l. 18, p. 110)	84,238.00	(l. 19, p. 110)

(2) Estimates based upon a net revenue of 21.60 cents per 1,000 cubic feet of gas sold, founded upon the actual operating costs for the first ten months of the year 1911, adjusted by the special master.

YEAR	RATE	NET RETURN	DEFICIT	
1910	.90	$114,912.00 (l. 14, p. 75)	$77,088.00	
1911	.90	118,968.16 (l. 22, p. 106)	73,031.84	(l. 24, p. 10
1912	.90	125,280.00 (l. 21, p. 107)	67,869.50	(l. 23, p. 10
1913	.90	130,680.00 (l. 8, p. 109)	72,050.00	(l. 10, p. 10
1914	.90	137,808.00 (l. 8, p. 110)	78,815.20	(l. 10, p. 11

(3) Estimates based upon a net revenue of 20.35 cents per 1,000 cubic feet of gas sold, founded upon the actual operating cost of the year 1910, adjusted by the special master.

YEAR	RATE	NET RETURN	DEFICIT	
1910	1.00	$168,327.20 (l. 13, p. 105)	$27,272.80	(l. 17, p. 10
1911	.90	106,122.45 (l. 32, p. 74)	85,877.55	
1912	.90	118,230.00 (l. 12, p. 108)	75,119.50	(l. 13, p. 10
1913	.90	123,117.50 (l. 13, p. 109)	79,612.56	(l. 14, p. 10
1914	.90	129,833.00 (l. 12, p. 110)	86,790.20	(l. 13, p. 11

(4) Estimates based upon a net revenue of 22.90 cents per 1,000 cubic feet of gas sold, founded upon the operating costs of the lowest one of the five years preceding the date when the ordinance was to become effective.

YEAR	RATE	NET RETURN	DEFICIT	
1912	.90	$132,820.00 (l. 8, p. 108)	$60,329.50	(l. 9, p. 10
1913	.90	138,545.00 (l. 15, p. 109)	64,185.06	(l. 16, p. 1
1914	.90	146,102.00 (l. 15, p. 110)	70,521.20	(l. 16, p. 1

If the appellant is entitled to no return upon the element in the value of its property usually known as "going value" or "going concern value," each of the foregoing deficits should be reduced $24,000.

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Note the special master's conclusion in estimate 3 supra as to the year 1910, where he finds that with the actual sales, and actual operating expenses, less his deductions, that is, with no factor estimated, the Company at the $1.00 rate failed to earn a fair return.

Sixth: Exhibits A, B, C and D, hereto attached, are computations based upon the four conclusions of the master above set out as to operating cost, his estimated future sales and the net return in cents per 1,000 cubic feet of gas, which would be realized at the 90 cent rate. Each of these exhibits bases the computation upon three valuations, founded upon the values determined by the master as above set out. These values are $2,540,000, which includes appreciation in the value of mains and services on account of paving over them; $2,400,000, which excludes the paving item; and $2,100,000, which excludes both the paving item and going value.

The significant things about these computations are (a) that in no instance does it appear that the property will earn a fair return; (b) that the amount of the deficit increases in the future annually, beginning with the year 1912, just as soon as increased investment, necessitated by increased sales, is taken into account by the special master in making his estimates; (c) that the per cent. of the total property which would earn no return, and which would therefore be confiscated, is large, ranging from a minimum of about 21½ per cent. to a maximum of over 47 per cent.

Looking at this from another aspect, Exhibit F shows, in the first column, the date; in the second

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column the volume of sales necessary to earn a fair return upon the various valuations; in the third column, the sales as estimated by the special master; and in the final column, how much these sales would fall short of affording the revenue necessary to constitute a fair return. **This shows that to afford a fair return, the volume of sales estimated by the special master must be increased, upon the average, more than 50 per cent.**

If the matter be approached for a third point of view the same result follows. It is not alone necessary, in order to earn a fair return, to manufacture gas; it is necessary also to sell it; and to render such sales possible there must exist the population necessary to consume the gas sold.

Exhibit G, hereto attached, shows the population which would be requisite in order to furnish consumers for enough gas to earn a fair return. The computation is based on the sales per meter for the year 1910, 26,960 cubic feet, and also upon sales per meter of 28,080 cubic feet, which is obtained by adding to the 26,960 cubic feet, 1,120 cubic feet, the amount the sales per meter increased during the five-year period after January 1, 1896, when the price of gas was reduced 10 cents per 1,000 cubic feet, to $1.00.

This table shows that while the actual population of Des Moines in 1910 was 88,900 (Exhibit E), to earn a fair return at the lowest valuation, $2,100,000, estimating an increase in sales per meter of 1,120 cubic feet per annum, there would have been required in 1911 a population of 124,605; while if the paving item and going value were included, the nec-

essary population would be 150,769. The method adopted in this computation is shown in Exhibit H in somewhat greater detail.

Exhibit I shows graphically the annual sales for the last fifteen years preceding January 1, 1911, the future sales as estimated by the special master, and the sales which would be necessary to earn a fair return upon the basis of his findings, showing conclusively that no normal increase in sales could produce this result.

In a similar manner, Exhibit J shows graphically the population since 1895, what would be a normal increase in population, and the increased population requisite in order to consume enough gas to earn a fair return. It is obvious at a glance that no such increase in either sales or population is within the range of human probabilities.

Seventh: There has been filed herewith the affidavit of Mr. Haines, the president of the Company, a copy of which is, for convenience, printed in the appendix hereto, commencing at page ....

This affidavit shows that for the first nine months of 1911 the actual cost of producing and distributing gas, including depreciation as fixed by the special master (report, p. 94) was 83.08 cents per 1,000 cubic feet of gas sold.

This includes the disputed item of rate regulation (the other disputed items amount to less than three cents per 1,000 cubic feet) which the special master disallowed. Deducting this item, this affidavit shows the most recent operating costs to be 74.67 cents, which at a 90-cent rate would leave a

net revenue of only 15.33 cents per 1,000 cubic feet of sales.

This affidavit shows further no abnormal increase in sales, the increase of 1911 over 1910 having been 4.35 per cent., and of the first nine months of 1912 over the corresponding period of 1911, only 2.29 per cent.

As compared with actual sales of 1911, 555,150,057 cubic feet, the sales which would be required to earn 8 per cent. and 6 per cent. on the several valuations are:

VALUATION	NECESSARY TO EARN 8 PER CENT.
$2,540,000	1,325,506,000 cubic feet
2,400,000	1,252,446,000 cubic feet
2,100,000	1,095,890,000 cubic feet

VALUATION	NECESSARY TO EARN 6 PER CENT.
$2,540,000	994,129,000 cubic feet
2,400,000	939,335,000 cubic feet
2,100,000	821,918,000 cubic feet

To have earned 6 per cent. on the lowest valuation, in the year 1911, would have required sales 1.48 times the actual sales for that year.

Reversing the process, the actual sales of 1911 would have earned upon the several valuations returns of 3.3 per cent., 3.5 per cent., and 4.0 per cent., the highest being barely half what the special master held the Company entitled to receive.

On top of this, an increase in the price of oil has added 5.178 cents per thousand feet to the manufacturing costs, an amount which will decrease this net revenue of 15.33 cents per 1,000 cubic feet more than one-third.

Eighth: To grant the relief asked for will not injure the public; to refuse it will irreparably injure the appellant. If the *status quo* is maintained pending the disposition of this appeal, as shown by the affidavit of Mr. Haines, each consumer will be required to pay annually $2.64 more than if the contested ordinance were in force. The bills are paid monthly so that the average excess per month would be 22 cents. This would be a burden to no one and its repayment can be absolutely secured by a bond in a proper amount; on the other hand, if the Company is successful upon this appeal it can collect only part of these back bills, and their collection will entail extraordinary expense, so that it is believed, as shown by the affidavit of Mr. Haines, its net permanent loss will be not less than $30,000 per annum.

Ninth: It, therefore, clearly appears:

(a) That the facts found by the special master point clearly to the conclusion that the 90-cent rate will not afford appellant a fair return.

(b) That the subsequent experience of the Company confirms this conclusion, and shows that the actual net revenue is only about 75 per cent. of the special master's estimates.

(c) That to maintain the *status quo* will not injure the public, while not to maintain it will work great and irreparable injury to the Company. Under these circumstances the court will, by proper order, maintain the *status quo* pending an appeal. *Omaha and Council Bluffs Street Railway Company et al.* v. *Interstate Commerce Commission et al.*, 222 U. S., 582, and cases there cited.

Wherefore, the appellant prays this court to grant an appropriate order enjoining and restraining the City of Des Moines, its officers, agents and employes, pending the determination of this appeal, from enforcing or attempting to enforce the ordinance in controversy in this suit, upon the giving of such bond, and upon such terms as this court shall order and direct in the premises.

DES MOINES GAS COMPANY,

By GEORGE H. CARR,
WILLIAM L. READ,
NATHANIEL T. GUERNSEY,
Its Solicitors.

STATE OF IOWA, }
COUNTY OF POLK. } ss.

I, George H. Carr, being first duly sworn, depose and say that I am one of the solicitors for the appellant in this suit, and have been such solicitor ever since the commencement of this suit. I further state that the matters of fact stated in the foregoing application are true, and that the additional matters therein stated as upon information and belief and by way of argument and inducement I believe to be true.

Geo. H. Carr

Subscribed and sworn to before me this 23rd day of November, 1912.

Orlando M. Brockett
Notary Public for Polk County, Iowa.

Notarial Seal

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FOR

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APPENDIX.

(Ordinance of December 27, 1910.)

ORDINANCE NO. 1767.

AN ORDINANCE to fix the price of gas supplied or distributed to the City of Des Moines, or its inhabitants, and to prescribe the payment of a license or occupation fee by any person, firm or corporation occupying or using the streets, highways, avenues, alleys or public places of the city in supplying or distributing such gas, and prescribing penalties for a violation thereof.

Be It Ordained by the City Council of Des Moines:

Section 1.—From and after the first day of January, A. D. 1911, the rate to be charged and collected for gas by any person, firm or corporation supplying or distributing gas to the City of Des Moines, or its inhabitants, is hereby fixed as follows, to-wit: Ninety (90) cents for each thousand cubic feet.

Sec. 2.—If any person, firm or corporation supplying or distributing gas to the City of Des Moines, or its inhabitants, shall reduce the price of gas to its patrons below the priced fixed in this ordinance, then any such person, firm or corporation shall not charge any person or persons for gas a price in excess of that which said person, firm or corporation has charged any other person. The provisions of this section shall not be construed to prohibit special contracts for lower rates to large consumers.

SEC. 3.—Any person, firm or corporation using the streets, highways, avenues, alleys or public places of said city in supplying or distributing gas shall pay to the City Treasurer for the use of said City of Des Moines, as a license or occupation fee, for each year that the streets, highways, avenues, alleys or public places of said city are used in supplying or distributing gas, beginning January, A. D. 1911, two (2) per cent of the gross receipts for gas sold during such year; the same to be paid semi-annually and within thirty (30) days after the expiration of the preceding six (6) months.

SEC. 4.—Any person, firm or corporation supplying or distributing gas to said City of Des Moines or its inhabitants, shall furnish gas of not less than twenty-two (22) candle power.

SEC. 5.—Nothing in this ordinance contained shall ever be construed to in any manner recognize any franchise or other rights claimed by any person, firm or corporation to use the streets, highways, alleys, avenues or public places of said city for the purpose of laying or maintaining mains and pipes in supplying or distributing gas to said city or its inhabitants.

SEC. 6.—Any person, firm or corporation supplying or distributing gas to said City of Des Moines, or its inhabitants, or any officer, agent, collector or employe of such person, firm or corporation, who shall charge, demand, collect or receive any rate or compensation for gas supplied or distributed to said City of Des Moines, or to any inhabitant thereof, in excess of the rate fixed by this ordinance, or any

such person, firm or corporation or officer thereof failing to pay the license fee provided for herein, shall be deemed guilty of a misdemeanor and upon conviction thereof shall be punished by a fine in a sum not exceeding one hundred dollars ($100.00), or by imprisonment in the city jail for a period not exceeding thirty (30) days.

SEC. 7.—All ordinances or parts of ordinances in conflict herewith are hereby repealed.

SEC. 8.—This ordinance being deemed urgent for the immediate preservation of the public peace, health and safety, shall be in full force and effect from and after the first day of January, A. D. 1911, and after its passage and publication as provided by law.

Passed December 27, 1910.

Signed December 27, 1910.

JAMES R. HANNA, *Mayor.*

Attest: NEAL JONES, *City Clerk.*

I, Neal Jones, City Clerk of the City of Des Moines, hereby certify that the above and foregoing is a true copy of an ordinance passed by the City Council of said City at a meeting held December 27, 1910, signed by the Mayor December 27, 1910, duly recorded and published as provided by law, February 4, 1911.

NEAL JONES, *City Clerk.*

PRELIMINARY INJUNCTION.

IN THE CIRCUIT COURT OF THE UNITED STATES,
SOUTHERN DISTRICT OF IOWA,
CENTRAL DIVISION.

Des Moines Gas Company, *Complainant*, *vs.* The City of Des Moines, James R. Hanna, John MacVicar, C. W. Schramm, J. W. Ash, Zell G. Roe, R. O. Brennan, *Defendants.*	#71-M Order.

This cause coming on for hearing upon the application of the complainant for a preliminary writ of injunction pursuant to the order of the court heretofore made, notice of which hearing was duly given as required by said order, and the parties now appearing by their solicitors and being heard upon said application, and it appearing that cause exists for the granting of the writ of injunction pending the final hearing of this cause:

It is therefore ordered, adjudged and decreed that the restraining order heretofore granted herein be continued in full force and effect upon a bond being given by the complainant within ten days from this date in the penal sum of one hundred thousand dollars, with sureties to the approval of the Clerk of this court, conditioned as hereinafter provided.

That upon the filing and approval of said bond a writ of temporary injunction shall issue herein as prayed, restraining and enjoining the defendant, the City of Des Moines, and each of the other defendants and their successors in office, from putting into effect or in any wise enforcing or attempting to enforce the provisions of the ordinance referred to in the bill of complaint passed by the city council of the City of Des Moines on the 27th day of December, 1910, being an ordinance entitled

"An ordinance to fix the price of gas supplied or distributed to the City of Des Moines, or its inhabitants, and to prescribe the payment of a license or occupation fee by any person, firm or corporation occupying or using the streets, highways, avenues, alleys or public places of the city in supplying or distributing such gas, and prescribing penalties for the violation thereof,"

and that said writ remain in force until the further orders of this court.

To the end that the rights of the respective parties may be and remain in *statu quo* pending the final hearing, it is further ordered, complainant consenting thereto, that until the further orders of the court in the premises it shall continue the manufacture, sale and distribution of gas in the City of Des Moines under and in accordance with the provisions of the ordinances of the City of Des Moines in effect on the 27th day of December, 1910, prior to the passage of the ordinance on December 27th, 1910, above referred to by title and date of passage. That it shall be permitted to charge and receive for gas sold and distributed by it at the rate of one

dollar and ten cents per thousand cubic feet, provided that on all bills paid on or before the 15th day of the month following the month in which the gas was used, a discount of ten cents per thousand cubic feet shall be allowed, and shall continue the payment to the city of the two per cent. license fee for use of streets in distributing gas provided in the ordinances of the city prior to the passage of the said ordinance of December 27th, 1910, but in the event the said ordinance of December 27th, 1910, is held valid, then on final decree the amounts of license fee from January 1st, 1911, shall be adjusted on the basis of said ordinance. Provided, however, that in the event that it shall be determined by the final decree in this cause that said ordinance of December 27, 1910, is valid, that complainant shall refund on demand to the persons by whom payment was made, all sums of money collected by it for gas sold and delivered from and after the first day of January, 1911, in excess of the rate specified in the said ordinance of December 27th, 1910. That the bond required to be given by complainant shall, in addition to the usual provisions of such bonds, be conditioned for the performance of the obligations hereby imposed upon the complainant.

It is further ordered that defendants' demurrer to the complainant's bill of complaint is overruled *pro forma* and without passing upon the merits of the questions thereby presented. To the end that a speedy determination of this controversy may be had, it is further ordered, by and with the consent of both parties, that the defendants shall file answer to the bill of complaint as amended by the first day

of February, 1911, and complainant shall plead thereto within five days thereafter.

It is further ordered that this cause be referred to a special master to be later appointed to take the evidence and report his findings of fact and conclusions of law. The taking of said testimony to be begun at Des Moines on the first day of March, 1911, and continue with all reasonable diligence until completed. The master shall file his report containing his findings of fact and conclusions of law thirty days prior to the first day of the May, 1911, session of this court at Des Moines.

Signed this 6th day of January, 1911.

(Signed) SMITH MCPHERSON, *Judge*.

(Endorsed)

Filed Jan. 6, 1911.

WM. C. MCARTHUR, *Clerk*.

UNITED STATES OF AMERICA, }
SOUTHERN DISTRICT OF IOWA. } ss.

I, Wm. C. McArthur, Clerk of the District Court of the United States for the Southern District of Iowa, hereby certify that as successor of the Clerk of the Circuit Court of the United States for the Southern District of Iowa, I have in my custody and control the files, records and proceedings of said former Circuit Court of the United States for the Southern District of Iowa, and that the foregoing is a full, true and complete copy of the order continuing in force the restraining order heretofore granted with the condition that a bond be given in the sum of one hundred thousand dollars to be approved

by the Clerk of the court, as full, true and complete as the original thereof now on file and of record in my office in the City of Des Moines, in said District.

IN WITNESS WHEREOF, I hereunto set my hand and affix the seal of said court this 4th day of November, A. D. 1912.

W. C. MCARTHUR,
Clerk as aforesaid.

(Seal.)

OPINION OF AUGUST 21, 1912.

In the District Court of the United States,
Southern District of Iowa,
Central Division.

Des Moines Gas Company, *Complainant*,
vs.
City of Des Moines and others, *Defendants*.
No. 71-M.

Mr. Geo. H. Carr, Mr. W. L. Read, Mr. N. T. Guernsey, for complainant.

Mr. Robert Brennan, Mr. H. W. Byers, Mr. E. C. Carlson, for defendants.

Opinion.

Smith McPherson, Judge.

A gas plant for lighting purposes was established in Des Moines a number of years ago, and now and for several years has been owned by complainant. At one time the rates were $1.30 per thousand; then $1.25; then $1.20; $1.15; $1.10, and finally $1.00. The City Council, by ordinance of December 27, 1910, fixed the rate at 90 cents. Then this action was brought to enjoin the enforcement of the ordinance for the reason, as is alleged, that a 90-cent rate will not be remunerative.

The case was referred to Robert E. Sloan as spe-

cial master, to take the evidence, reduce it to writing, and report the same to the court, together with his findings of fact and conclusions of law.

It is most gratifying to the court to learn that counsel on both sides agree that learning, patience, fairness and all those qualifications a Master in Chancery should possess, are evidenced by nearly one year of work by Judge Sloan in this case. And the report of the master now pending on exceptions fully warrants the correctness of the compliments of counsel as respects the work and report of the master. The court deems it appropriate to make of record the statement that the administration of justice has been furthered by the untiring industry of the master, whose record in this case is in keeping with his long time service as an Iowa Judge.

While counsel on both sides and the court unite on the foregoing, no one means to say that the report of the master is not subject to criticism and exceptions. Neither party is satisfied with all of his findings. But the real test of judicial action is not in the fact that a litigant is not satisfied, nor in the fact that a tribunal in proceedings to review may otherwise conclude.

I deem it appropriate to call attention to another phase of this litigation. The ordinance was adopted within a few minutes from its introduction. Quite likely it had been considered by the members in their individual capacities. But in open session it received but little consideration, and without the presence of any one for the Gas Company. And every member voting to reduce the earnings had a direct personal and moneyed interest in thus reduc-

ing the rates. If a Judge were to so act, his acts would be absolutely void, because of the long time maxim, "No man can be judge in his own cause." And this ought to apply to those who act in an administrative or legislative capacity. This litigation has cost both the Gas Company and city extravagantly large sums, most of which cannot be taxed as costs, nor recovered back by the party successful in the end. Much of this kind of litigation, and practically all of the expense would be avoided if Iowa, like so many of the other, including some neighboring states, had an impartial and city non-resident commission or tribunal with power to fix these rates at a public hearing, all interested parties present, with the tribunal selecting its own engineers, auditors and accountants. Too often we have selfish, partisan, prejudiced and unreliable experts engaged for weeks at a time, at $100.00 or more and expenses per day, exaggerating their importance and making the successful party in fact a loser. With all of our boasted advancement, Iowa is a laggard in this matter, and will continue as such until these rate makings are taken from the power of city councils. Appeals to the courts will seldom be taken from the findings of such a tribunal.

But at present, the city councils have the duty and power to fix rates. And when rates are thus fixed by them, there is a presumption, greater or less according to the character and methods of their work that such rates are remunerative. And in any event the corporation whose rates are reduced has the burden to show that the rates thus fixed are not

remunerative, failing in which the rates must be observed and enforced.

And this was the matter referred to the master. He reports that a 90-cent rate is sufficiently high for a sufficient return to the Gas Company. The order appointing Judge Sloan required him to take all the testimony, including exhibits, return the same to the court, and make findings of fact with his conclusions of law. All these he has done. Both the City and the Gas Company have filed exceptions to the report.

In many cases courts themselves have heard the rate cases under 67 of General Equity Rules as amended. But in districts like this, with but a single Judge, the time would all be devoted to such cases, with other litigation at a standstill. And the Supreme Court has said that it is a seemly and orderly and commendable course to refer such cases to a master. *R. R.* v. *Tompkins,* 176 U. S., 167; *Lincoln Gas Co.* v. *Lincoln,* 223 U. S., 349. And in case of such a reference the report of the master stands for something substantial, and something besides recommendations. His conclusions have every reasonable presumption in their favor, and are not to be set aside or modified unless there clearly appears to have been error or mistake on his part. *Camden* v. *Stuart,* 144 U. S., 104, *119,* and cases therein cited.

So that it is incumbent on such party to make it clearly appear that the report of the master is erroneous as respects the matters covered by exceptions. The City has filed several exceptions to the report; largely on questions of fact. But they were not argued orally, nor by brief, and the alleged er-

rors are not made clearly to appear. Every of said exceptions of the City is denied.

There are some propositions now so firmly established by the courts as not to be longer within the limites of debate.

The net earnings according to the duration of the franchise, the earning power of moneys in the vicinity, the hazards, moral and physical and otherwise, should vary from four to eight per cent. beside that set aside for depreciation and maintenance. But there is and can be no rigid or inflexible rule as to the per cent. to be thus earned. *Stanislaus County* v. *San Joaquin Company*, 192 U. S., 201, *216; Knoxville* v. *Knoxville Water Company*, 212 U. S., 1; *Wilcox* v. *Consolidated Gas Co.*, 212 U. S., 19; *Railway Commission* v. *Cumberland Telephone Company*, 212 U. S., 414; *San Diego Land Company* v. *National City*, 174 U. S., 739; *Lincoln Gas Co.* v. *City of Lincoln*, 223 U. S., 349; *Cedar Rapids Gas Co.* v. *Cedar Rapids*, 223 U. S., 655.

The "good will" and that which the corporation enjoys as being from the only source from which gas can be obtained is not an element of value on which profits should be earned in estimating whether the rates are remunerative or confiscatory. *Wilcox* v. *Consolidated Gas Co.*, 212 U. S., 19, *52*. All concede that the present value is the basis on which returns are to be estimated. And with the findings of the master on that matter there are but two matters which merit consideration. And on those two questions the great weight of the argument by counsel has been made.

One of these is what is called the "reproduction

theory'' as determining the present value. When the gas mains were laid many of the streets were unpaved, but which are now paved streets (21 per cent.). To reproduce the system at this time it would be necessary to take up something like a yard in width and for the length of 21 per cent. of the streets, place the mains the proper depth, fill in with earth and replace the paving. The extra cost on account of the paving would amount to $140,000.00. The master declined to allow this sum as forming part of the value of the plant.

It is claimed the true value of any building, structure or plant is that sum which it takes to reproduce it, less the depreciation of the one to be replaced. But little assistance is obtained from the authorities, although it is claimed the case of *Wilcox* v. *Consolidated Gas Company*, 212 U. S., 19, is in point. The opinion does not show this to be so. Something of a showing is made in favor of that contention, by going to the original record, and the assignments of error. But it is not easily understood how the Supreme Court in that great case, so ably argued, with so much involved, meant to be so understood without expressly so declaring in the opinion.

No one doubts but that the cost of reproduction may in many cases be considered, and in some cases is a solution of the controversy.

What makes value, and what is the evidence thereof?

Metaphysical distinctions as to terms as used with reference to value by political economists aid but little. Exchange value, selling value, cost value,

value for use as an utility, value as to income and so on are too often used loosely.

But the question is as to its value today with reference to income. What it may have cost is pertinent. What it will sell for is to be considered. And if destroyed by any agency, such as rust, crystallization, or other forces, what must be paid to reproduce it is a subject of inquiry. All of these may be considered. In my opinion those who maintain that what it will cost to reproduce the plant, less depreciation, is the true value, in many instances confound the real question with one of many evidences of the real value. Reproducing cost is an evidence of what the real value is after subtracting the depreciation. But what is to be done with the value of stocks and bonds on the reproductive theory? And what becomes of the original cost on the reproduction theory? And what becomes of the question of the increase or falling off in numbers of consumers? And the same as to increased or diminished expenses?

The theory at first thought in all cases is plausible and attractive, but in the end oftentimes utterly illogical and unreliable, originally adopted as a mere time-saver by mere theorists, and sought to be enforced as against substantial and unbending facts. If the plant is to be reproduced, when is it to be done? If when reproduced, will the streets then be paved, and if paved, paved with what? Must it all be reproduced at once, or the same covered by a number of years? If but gradually reproduced, why should not such cost go into either the operating or maintenance account? No one can state when it

must be reproduced, and a material question arises: What, then, as compared with the present, will be the price of labor, material and freight? But finally and to my mind the conclusive reason against the soundness of the reproduction under paved streets theory is, that to allow that theory to prevail, and to increase the capitalization now to the extent of $140,000.00, is to allow such gas rates as will pay a dividend on such sum from and after this date. But the sum of $140,000.00 is not put in the capital or value account until the plant is reproduced.

As, of course, streets paved or unpaved make no difference in the earning power of the gas plant, and but little if anything goes more directly and accurately to the question of value of any structure or plant than its rental, earnings, or as a dividend producer.

There are many instances in which the reproduction theory is the best of all methods for getting at the present value, and in other instances the most misleading. And it is deceptive, in my opinion, to now add the cost of taking up and replacing pipe under paved streets at an estimated cost of $140,000.00 extra, and does not warrant an increased dividend of $8,400.00 or some greater sum. Such a dividend is a mere paper dividend, and is arrived at, not because of increased earnings, not because of increased capital or investments, not because of increased operating or maintenance expenses, but solely by reason of a supposed necessity of at some time, in some manner, under a then some kind of street, on a mere guess of what labor and material would then cost. Many of the principles with rela-

tion to railway rates are applicable to gas rates. And perhaps the latest analysis of the reproduction theory is found in the recent case of *Louisville R. R.* v. *Railway Commission*, 196 Fed. Rep., 800, in an opinion of Judge Jones of the Alabama District. He shows the value of this theory, but likewise shows that it is not a hard and fast rule covering all phases. Finally, pipes under a paved street are of very long life; many times longer than if the street were not paved.

The theory applied to paved streets is but a theory, is illogical and against facts, and was properly denied by the master.

The master finds that the "going concern" value of the plant is $300,000.00, but the Gas Company, by its exceptions, contends that this sum is not in the total of items making $2,240,928.00, the value placed on the entire plant. A "good will" value, and a "going concern" value, are often confused and used interchangeably, and I am inclined to believe that in some instances the master's report is subject to this criticism. But whether this is so or not, is not of much importance, and it is more of a verbal criticism than a practical one. Under the authorities cited, as well as others easily found, from those cited, a "good will" value, by reason of being a monopoly, such as a Gas Company has under an ordinance, is not to be reckoned. The item of $300,000.00 for "going value" is quite important in this case. It is contended that if this $300,000.00 must be added and the consumption of gas remains the same, and the percentage of dividends allowed by the master should stand, there will then be a

shortage. The authorities already cited, and which in my opinion are in accord with good sense, favor the allowance of a "going value." Every kind of business, with no exception, has a value known as "going value," and such "going value" is in no way connected with the monopoly or "good will" value. The Gas Company contends that this "going value" of $300,000.00 was erroneously omitted by the master in his totals, while the City contends that the sum of $300,000.00 has already been considered in making up the grand total of $2,240,928.00. I am of the opinion that the contention of the City is a correct one. This matter has received from me most earnest attention and consideration, and I will briefly present the reasons for my conclusion.

The master fixes the physical value at $2,240,-928.00. He means thereby and to my mind clearly states that as the value of the *Gas Plant*. There are but five items making this grand total. Counsel on both sides and I agree that "going value" is a part of the present value. The master so held. It would be strange that the master would hold that the "going value" of $300,000.00 entered into the actual value, and then by inadvertence omit it. And it would be the more strange, after considering the items set forth in the report.

By the report he lists the following:

1.	Working capital,	$140,000.00,
2.	Real Estate,	150,000,00,
3.	Organization expenses,	6,923.00,
4.	Meters in stock,	6,603.00,
5.	Present value of physical property, aside from above items,	1,937,402.00.

Evidently because the master used the word *physical,* counsel seem to conclude that he did not include "going value." If he had omitted the word "physical" as an identification, then no one would doubt but that he did include "going value." But why would the master include five items, and omit one that he meant to include? But the criticism is too refined and technical to stand as against his entire report. After enumerating the four items he adds "present value of physical property *aside from* above items, $1,937,402.00." This is as though he had said "all other items of value to be considered."

How can it be said that he meant "junk value"? Or "Bare bones" value, as used in some of the cases? It is not fair to say that he meant junk value, or bare bones value. He meant that was the value coupled with the preceding items of the gas plant; a plant making and selling gas. He meant that, and neither more nor less than that.

If the question were now for decision, I would have much doubt as to the item of working capital, $140,000.00. The master was liberal with the Gas Company by allowing that item. I fail to find satisfactory evidence in this tremendous record as to that item, although there is evidence bearing thereon. But every business man knows that the Gas Company daily makes deposits, and daily checks out for expenses, and at stated periods for interest on its bonds, and for dividends. Whether it receives interest on its daily balances, does not appear, nor does it appear whether it must pay interest on its overdrafts if it has such. And if it has on hand

$140,000.00 as working capital, why such sum would not earn interest is not made to appear. I only mention this to show that the master has not borne down on the Gas Company.

When the restraining order was issued herein to be in force pending litigation, it was done with full consideration. An actual test is the highest degree of proof as to some phases, and some phases only of litigation like this. But it was made to appear that a very large number of gas consumers paid cash without waiting for the presentation of bills. This was made easy to do by the meters having annexed thereto a mechanism so adjusted that by dropping any sum of metal money through a slot, the requisite amount of gas could be used on the basis of $1.00 per thousand. And the mechanism would correctly measure the gas on that basis. As, of course, to allow the consumer to have 1,000 feet of gas at 90 cents, the wheels and appliances must be changed. To do this persons familiar with such mechanism must be employed. And it was made to appear that it would take more than a month of time to do this, and at much expense.

Every of the exceptions of the Gas Company is overruled.

The bill of complaint is dismissed with prejudice, and the interlocutory writ of injunction and restraining order vacated.

But the vacation of such writs will not be effective for sixty (60) days from the decree this day entered, to the end that such mechanisms may be adjusted to the ninety-cent rate.

And to the further end that if said decree by

actual test may prove that a ninety-cent rate is not remunerative, the decree will provide that after three years of such actual test this case may be reinstated, and the pleadings and evidence now on file, used as of full probative force, supplemented by such additional pleadings and evidence as may be deemed by either party advisable.

This will so materially reduce the expense as to make it almost nominal.

In the event of an appeal, a *supersedeas* bond in the penalty of five thousand ($5,000.00) dollars will be approved. But such a bond will only supersede the payment of the costs. Any other *supersedeas* must be applied for to the Appellate Court.

Such will be the decree.

Des Moines, Iowa, August 21, 1912.

IN THE DISTRICT COURT OF THE UNITED STATES,
SOUTHERN DISTRICT OF IOWA,
CENTRAL DIVISION.

Des Moines Gas Company, *Complainant*,
vs.
City of Des Moines, and others, *Defendants*.
No. 71-M.

DECREE.

Now on this August 21, 1912, the court being fully advised, files an opinion herein finding the equities of the case to be with the defendants.

It is therefore considered, ordered, adjudged and decreed as follows:

1. The bill of complaint herein is dismissed with prejudice.

2. The complainant will pay the costs herein made to be taxed by the Clerk, which will include moneys paid by defendants on account of stenographers and typewriters, and moneys paid by defendants on account of master's compensation and expenses, for which after forty (40) days, a writ of execution will issue.

3. The restraining order and temporary injunction heretofore issued herein are both vacated, and such vacation to be effective sixty (60) days from this date.

4. At any time on and after three years from this date complainant, its successors or assigns, may on

motion reinstate this case with all the pleadings and evidence now on file, with the same and like effect as though filed for such subsequent hearing. And each party may then file such additional pleadings and take and file such additional evidence as to each party may be deemed advisable.

5. If complainant elects to appeal from this decree or any part thereof, a *supersedeas* bond properly conditioned, in the penalty of five thousand ($5,000.00) dollars, with ample surety, will be approved. But the approval and filing of such bond will only stay said writ of execution for said costs. Any other *supersedeas* than as aforesaid is by this court denied.

To each, all and every of the foregoing, in so far as adverse, complainant excepts.

Done this August 21, 1912.

(Signed) SMITH MCPHERSON,
Judge.

A true copy.
Attest:
W. C. MCARTHUR,
Clerk.

IN THE DISTRICT COURT OF THE UNITED STATES,
SOUTHERN DISTRICT OF IOWA,
CENTRAL DIVISION.

Des Moines Gas Company, *Complainant,* *vs.* City of Des Moines *et al.,* *Defendants.*	*Application for Modification of Decree Rendered Herein on the 21st day of August, 1912.*

To the Honorable Judges of the District Court of the United States for the Southern District of Iowa:

Complainant shows to this Honorable court that on the 6th day of January, 1911, there was signed and entered of record in this case an order temporarily restraining defendants from putting in force the ordinance of December 27, 1910, and until the further order of the court, permitting complainant to charge for gas sold and delivered, at the rate of $1.10 per thousand cubic feet, provided that upon all bills paid on or before the 15th day of the month following the month in which the gas was used, a discount of 10 cents per thousand cubic feet should be allowed. Said order of January 6, 1911, contained the following recitals:

> "Provided, however, that in the event that it shall be determined by the final decree in this cause that said ordinance of December 27, 1910, is valid, that complainant shall refund on demand by the persons by whom payment was

made, all sums of money collected by it for gas sold and delivered from and after the first day of January, 1911, in excess of the rate specified in the said ordinance of December 27th, 1910."

Complainant shows to this Honorable court that it has, since the entry of said order on the 6th day of January, 1911, charged and received for gas sold and distributed in accordance with the provisions thereof. The several sums paid to complainant by individual consumers in excess of the rates fixed in the ordinance of December 27, 1910, are small, but the aggregate of said sums so collected constitutes a very large amount of money.

In the decree filed herein on the 21st day of August, 1912, is the following provision:

> "If complainant elects to appeal from this decree or any part thereof, a *supersedeas* bond properly conditioned, in the penalty of five thousand dollars with ample surety, will be approved. But the approval and filing of such bond will only stay said writ of execution for said costs. Any other *supersedeas* than as aforesaid is by this court denied."

Complainant intends as soon as possible to perfect an appeal from said decree, and unless the requirement of said order and decree that it shall refund on demand to the persons by whom payment was made all sums of money collected for gas sold and delivered from and after the first day of January, 1911, in excess of the rate specified in the said ordinance of December 27th, 1910, be superseded, complainant will be compelled, before the determination of said appeal, to refund on the demand of the

persons by whom payment was made, all sums of money collected in excess of the rate specified in said ordinance of December 27th, 1910. In the event that complainant obtains a decree in its favor upon the trial of this case on appeal, and in the event said ordinance of December 27th, 1910, shall be declared invalid, complainant will be unable to recover all or the greater portion of the money so refunded. No obligation ought to rest upon complainant to refund said sum of money until the determination of this case upon appeal, and until it has been adjudicated upon the trial of this case on appeal that the ordinance of December 27th, 1910, is a valid ordinance.

In the third paragraph of said decree it is provided as follows:

> "The restraining order and temporary injunction heretofore issued herein are both vacated, such vacation to be effective sixty days from this date."

The vacation of the said order and temporary injunction become effective on the 20th day of October, 1912.

WHEREFORE, complainant prays that the decree of August 27th, 1912, be so modified that the requirement of said order and decree that it refund on demand the sums of money collected for gas sold and delivered from and after the first day of January, 1911, in excess of the rate specified in said ordinance of December 27th, 1910, may be superseded on such terms and conditions as to bond as may to the court appear just and equitable, and that the provisions of said decree fixing the time when the vacation of

the restraining order and temporary injunction heretofore issued herein become effective shall be extended thirty days.

(Signed) W. L. READ,
N. T. GUERNSEY and
GEO. H. CARR,
Solicitors for Complainant.

(Endorsed)
Filed Oct. 8, 1912.
WM. C. MCARTHUR, *Clerk.*
By LOUIS J. ADELMAN, *Deputy.*

AFFIDAVIT OF JANSEN HAINES.

STATE OF IOWA, } ss.
POLK COUNTY. }

I, Jansen Haines, being duly sworn, on oath state: That I am the president of the Des Moines Gas Company, which is the appellant in the case of the Des Moines Gas Company against the City of Des Moines *et al.*, in which a final decree was rendered by the District Court of the United States for the Southern District of Iowa on or about the 10th day of October, 1912.

I further state that Exhibit "A" hereunto attached is a full, true and correct statement of the actual operating expenses of the Des Moines Gas Company for the first nine months of the year 1912, showing such operating expenses in the aggregate and also an analysis of them in cents per thousand feet of gas sold.

That the total cost of manufacturing and delivering gas sold by the Company in the City of Des Moines, Iowa, was 76.41 per thousand cubic feet; that the said 76.41 includes 8.41 per thousand cubic feet on account of rate regulation expenses paid by the said Company.

That upon the basis of allowing 6.67 per thousand cubic feet of gas sold for depreciation, the net revenue which the Company would derive from each thousand cubic feet of gas sold during the said nine months, if the price at which it had been sold had been ninety cents (90c) per thousand cubic feet, would have been as follows:

		Cents.
Gross revenue per thousand cubic feet.		90.00
Operating expenses	76.41	
Depreciation	6.67	83.08
Net revenue per thousand cubic feet of sales		6.92

That the foregoing statement included rate regulation as a part of the operating costs. If this item be deducted, then the said net revenue, leaving out of account this item, is as follows:

		Cents.
Gross revenue per thousand cubic feet..		90.00
Operating expenses, excluding rate regulation expenses	68.00	
Depreciation	6.67	74.67
Net revenue in cents per thousand cubic feet of gas sold		15.33

That the actual sales of gas in the City of Des Moines made by the said Company during the said nine months were, as shown by the records of the said Company, 410,804,719 cubic feet; that such sales for the corresponding months for the year 1911 were 401,592,973 cubic feet; increase, 9,211,746 cubic feet, which is 2.29 per cent of said 1911 sales.

That the total sales of gas in the City of Des Moines by the said Des Moines Gas Company during the year 1911 were, as shown by the records of said Company, 555,150,057 cubic feet, and that said sales were 104.35 per cent of the like sales for the year 1910.

That I have computed the amount of gas which it will be necessary to sell in a year in the City of Des Moines upon the various valuations of the prop-

erty of the Des Moines Gas Company used in connection with the argument of said case, and have set opposite each valuation the amount of such sales, said computation being as follows:

VALUATION.	SALES NECESSARY TO EARN 8%.
$2,540,000	2,936,417,000 cu. ft.
2,400,000	2,774,567,000 " "
2,100,000	2,427,746,000 " "

A like computation based upon a return of 6 per cent gives the following results:

VALUATION.	SALES NECESSARY TO EARN 6%.
$2,540,000	2,202,313,000 cu. ft.
2,400,000	2,080,925,000 " "
2,100,000	1,820,810,000 " "

Computations made upon the basis of a net revenue of 15.33 cents per thousand cubic feet of gas sold show that the volume of annual sales required to earn an annual return of eight per cent (8%) upon said valuations would be as follows:

VALUATION.	SALES NECESSARY TO EARN 8%.
$2,540,000	1,325,506,000 cu. ft.
2,400,000	1,252,446,000 " "
2,100,000	1,095,890,000 " "

Computations made upon the basis of a net revenue of 15.33 cents per thousand cubic feet of gas sold show that the volume of annual sales required to earn an annual return of six per cent (6%) upon said valuations would be as follows:

VALUATION.	SALES NECESSARY TO EARN 6%.
$2,540,000	994,129,000 cu. ft.
2,400,000	939,335,000 " "
2,100,000	821,918,000 " "

I have computed the rate of return which the actual sales for the year 1911 of the said Company would have afforded upon each of said valuations if the net return per thousand feet of gas sold has been 15.33 cents, and the results of this computation are as follows:

VALUATION.	RATE OF RETURN.
$2,540,000	3.35 per cent.
2,460,000	3.55 " "
2,100,000	4.05 " "

In making these computations I have used the operating costs for the first nine months of 1912, because they are the latest operating costs which the Company has, and I have used the sales for the year 1911, because that is the latest complete year.

Taking rate regulation expenses as a constant factor, so as to make the other factors comparable, the operating expenses for the first nine months of 1912 were .61 of a cent more per thousand cubic feet of gas sold than for the year 1911. This is due to the fact that a very favorable contract which the Company had for oil, which is used in large quantities in manufacturing gas, did not expire until about July 15, 1912. The price which the Company paid for such oil under said expired contract was 2.80 cents per gallon, but for the oil purchased since said contract expired, it has been compelled to pay 4.05 cents per gallon.

During the first nine months of 1912, the Company used 1,786,462 gallons of oil, from which there were made 431,308,781 cubic feet of gas. If this oil had all been charged for at the old rate, the cost of oil for each 1,000 cubic feet of gas made would have

been 11.597 cents. If this oil had all been charged for at the new rate, the cost of oil for each 1,000 cubic feet of gas made would have been 16.775 cents. That is, this increase in the price of oil will, in the future, increase the cost of producing gas 5.178 cents for each 1,000 cubic feet of gas made.

On account of the Company's method of keeping its accounts, this increase has not yet fully manifested itself in the accounts. That the price of oil has been gradually increasing as the limitations upon the supply have become fixed, and the use of it has increased, and it is not probable that this price will decrease in the future.

That the number of consumers of the Des Moines Gas Company in the City of Des Moines was on the first day of January, 1912, 20,601; that the average revenue which the Company received for the year 1911 from each consumer was $26.73.

That to reduce the price of gas from $1.00 per thousand to ninety cents (90c) per thousand would reduce the total annual bills of each consumer in the City of Des Moines approximately $2.64 for each year pending the disposition of the appeal in this case, and that the same reduction would reduce the net revenue of the said Company during each said year approximately $54,329.00. That consumers' bills are rendered and paid monthly.

That because of the small amount which would be due from each consumer, and because of the changes which are constantly taking place in the consumers, and the difficulty in finding those who are no longer patrons of the Company, and because of the fact that many of them are wholly irresponsible finan-

cially, and because of the relatively large expense involved in an attempt to enforce collection of a large number of small bills which are not recent, if the ninety cent (90c) rate should be put into effect pending the determination of the appeal, I believe that the Company would, if it were successful in the appeal, suffer a permanent loss of approximately $30,000 per annum in net revenue.

JANSEN HAINES.

Subscribed and sworn to before me this eleventh day of November, A. D. 1912.

JENEVIEVE WILLIAMS,
Notary Public of Iowa in and for Polk County.

Exhibit "A."

Expenses of Operation for First Nine Months of Year 1912.

Manufacturing—	Cost per M. C. F. Gas Made.	Dollars.
Manufacturing	.0109	4,711.49
Boiler Fuel	.0185	7,986.13
Expense Works	.0129	5,577.24
Generator Fuel	.0962	41,484.98
Manufacturing Labor	.0172	7,398.84
Oil	.1183	51,037.23
Purification Labor	.0012	527.11
Repairs Works	.0313	13,492.71
Water Tax	.0015	646.64
Total Manufacturing	.3080	132,862.37
Gas in Holder	.0001	134.61
Residuals	*.0196*	*8,473.00*
Leakage 20,773,286 cu. ft. @ .2885 = $5,991.02	.2885 .0146	124,523.98
	.3031	

Distribution—	Cost per M. C. F. Gas Sold.	Dollars.
Distribution	.0115	4,736.25
Complaint Expense	.0130	5,331.27
Distribution Office Expense	.0115	4,732.53
Gratuitous Works	.0153	6,284.28
Repairs Mains	.0229	9,375.09
" Services	.0122	4,997.71
" Meters	.0159	6,531.38
Setting and Removing Meters.	.0115	4,741.47
Street Mains Abandoned	.0002	90.00
Total Distribution	.1140	46,819.98

COMMERCIAL EXPENSE—		
Commercial Expense	.0046	1,886.22
Expense Collection	.0142	5,823.22
" Office	.0281	11,545.33
Office Salaries	.0499	20,513.38
Total Commercial Expense.	.0968	39,768.15

NEW BUSINESS—	COST PER M. C. F. GAS SOLD.	DOLLARS.
Promotion Management	.0049	2,009.53
Promotion Office Supplies & Expenses	.0089	3,645.50
Miscellaneous Advertising	.0041	1,697.49
Newspaper Advertising	.0040	1,658.81
Soliciting	.0180	7,408.43
Appliance Demonstrations	.0038	1,574.20
Appliance Exhibitions	.0017	707.90
Gas Ranges	*.0120*	*4,950.66*
Circulating Water Heaters	*.0025*	*1,019.37*
Special Appliances	*.0077*	*3,148.28*
Connecting New Ranges	.0040	1,657.22
Connecting New Circulating Water Heaters	.0020	823.40
Connecting New Special Appliances	.0031	1,275.13
Connecting Consumers' Appliances	.0004	154.63
Gas Appliance Repairs	.0006	256.75
Housepiping	*.0017*	*716.42*
Fixtures		*7.05*
Gas Arc Lamps		4.27
Lamps	*.0012*	*528.45*
Incandescent Burner Repairs	*.0015*	*636.74*
Arc Lamp Maintenance	.0017	685.60
Incandescent Burner Maintenance	.0011	467.41
Uncollectible Sundry Sales Bills	.0015	627.55
Gas Arc Lamp Depreciation	.0018	739.61
Special Reflex Expense	.0001	48.53
Total New Business	.0351	14,434.99

EXPENSE—		
Accidents and Damages.....	.0101	4,160.17
Association Meetings	.0015	594.36
Expense General	.0027	1,117.85
" Extraordinary	.0055	2,270.60
Insurance	.0032	1,309.49
Interest	*.0001*	*23.41*
Litigation	.0018	751.67
Salaries General	.0183	7,500.00
Uncollectible Bills	.0050	2,050.11
Rate Regulation Expense.....	.0841	34,549.45
Total Expense	.1321	54,280.29
Special Tax	.0202	8,312.15
Taxes	.0615	25,216.71
Street Lamp Operating.....	.0013	548.31
Operating Expenses	.7641	313,904.56

DEC 16 1912
JAMES H. McKENNEY,
CLERK.

IN THE

Supreme Court of the United States

OCTOBER TERM, A. D. 1912.

No. ~~884.~~ ~~387~~ 75

DES MOINES GAS COMPANY,
Appellant,

vs.

CITY OF DES MOINES, JAMES R. HANNA, JOHN MAC VICAR, CHARLES W. SCHRAMM, JOHN WESLEY ASH, ZELL G. ROE and ROBERT O. BRENNAN,
Appellees.

Appeal from the District Court of the United States for the Southern District of Iowa.

RESISTANCE TO APPLICATION FOR AN ORDER TO MAINTAIN THE STATUS QUO, AND TO ENJOIN THE DEFENDANTS FROM PUTTING INTO EFFECT THE ORDINANCE RATES IN CONTROVERSY, PENDING THIS APPEAL, AND BRIEF AND ARGUMENT IN SUPPORT THEREOF.

ROBERT O. BRENNAN,
H. W. BYERS,
Solicitors for Appellees.

O'Donnell Printing Company, Des Moines

IN THE

Supreme Court of the United States

OCTOBER TERM, A. D. 1912.

No.....

DES MOINES GAS COMPANY,
Appellant,

vs.

CITY OF DES MOINES, JAMES R. HANNA, JOHN MAC VICAR, CHARLES W. SCHRAMM, JOHN WESLEY ASH, ZELL G. ROE and ROBERT O. BRENNAN,
Appellees.

Appeal from the District Court of the United States for the Southern District of Iowa.

Resistance to appellant's application for an order to maintain the status quo, and to enjoin the appellees from putting into effect the ordinance rate in controversy, pending this appeal.

Now come the appellees in the above entitled suit and resist the application of the appellant for an order herein to maintain the *status quo*, and to enjoin the appellees from putting into effect the ordinance rate in controversy in the said suit, pending this appeal, and as grounds for such resistance, show:—

First: That the decree of the lower court in the said suit was rendered after a full and complete hearing before a Master and is in all of its provisions just and proper and fully warranted by the record.

Second: Because had the lower court refused a restraining order or temporary injunction prior to the hearing before the Master, and before the rendition of the decree in the lower court, it would not have furnished any grounds for appeal. Therefore, the fact that the temporary restraining order and temporary injunction were dissolved by the court after a hearing upon the merits furnishes the conclusive reason for denying the present application of the appellant.

Buffington v. Harvey, 95 U. S., 99, 24 Law Ed., 381.

Third: The record shows that the Master finds that the ninety cent rate for gas fixed in the ordinance in controversy, will afford the appellant more than a fair compensation for its service.

Fourth: Because the decree of the lower court in the said suit grants to the appellant all the rights to which it is entitled under the laws and Constitution of the United States as is disclosed by the record upon which said decree is based.

Fifth: There is nothing in the decree of the lower court in the said suit that deprives the appellant of any right it has under the law to apply to said lower court for relief whenever conditions justify such application. It being provided in Paragraph four thereof that at any time on and after

three years, the complainant may, on motion, reinstate said case with all the pleadings and evidence now on file with the same and like effect as though filed for such subsequent hearing, and each party may then file such additional pleadings and take and file such additional evidence as to each party may be deemed advisable.

Sixth: The provision in the decree of the court below in the said suit, granting to the appellant the right to supersede and retain the moneys collected for gas sold and delivered from and after the first day of January, 1911, to the 15th day of November, 1912, in excess of the rate specified in the said ordinance of December 27, 1910, in controversy, satisfies all reasonable requirements of the law and is agreeable to the usages and principles of law, maintains the *status quo* of the parties and affords full opportunity for this court to exercise its jurisdiction in respect of the appeal.

Seventh: That the said application of the appellant herein fails to show that irreparable injury will follow the enforcement of the Ordinance in controversy and the decree of the lower court, or that this court will lose jurisdiction of the parties to the said suit or the subject matter thereof.

Eighth: Because the appellant is seeking, by said application, to have this court, in advance of the hearing on the appeal, review the action of the trial court in dissolving a restraining order and temporary injunction after a hearing upon the merits and after said court has exercised its discretion with respect thereto.

Ninth: Because the ordinance of the Defendant. City of Des Moines, complained of in said suit was enacted on or about December 27, 1910, and Appellant's bill was filed in the lower Court on or about January, 1911, and at the same time an application for restraining order and temporary writ of injunction was filed, upon which a restraining order was granted, and later a temporary writ of injunction issued; that thereafter, on or about May, 1911, the Hon. Robert Sloan was appointed by the Court, as Special Master, to take and hear the testimony, make findings of fact and to state conclusions of law; that thereafter and on or about July 12, 1911, the taking of testimony was begun and continued throughout the months of July, August, September, October and a large part of November, at which time the taking of testimony was closed, arguments of counsel concluded and the cause fully submitted; that thereafter and on or about the 5th day of April, 1912, the Master filed his preliminary report and fixed a time for hearing thereon, at which time counsel for both sides appeared and were fully heard with respect to all matters covered by such preliminary report. That thereafter and on or about the 12th day of April, 1912, the Master filed a supplemental report, together with his final conclusions, to which report the findings by the Master and his conclusions of law both parties, within the time allowed, filed their exceptions and on or about July, 1912, His Honor, Judge Smith McPherson, in whose Court said cause was pending, heard said exceptions and after the same were fully submitted handed down his decision and decree, under date of August 21, 1912, confirming and approving the report of the Master and dis-

missing Appellant's bill, with prejudice. That thereafter and on or about October 7, 1912, Appellant made application to His Honor Judge McPherson, requesting modification of the decree theretofore rendered, so as to permit Appellant to supersede and stay the enforcement of its obligation to refund the money collected by it after January 1 1911, in excess of the rate specified in the ordinance complained of, and by striking from the decree the time limit of sixty days and substituting therefor the words "ninety days." That said application was fully heard, arguments made on both sides and on the 10th day of October, 1912 decree was rendered by His Honor, Judge McPherson, granting the application of the Appellant in so far as to modify the former decree, with respect to the refunding of the excess collections for sales of gas and permitting such refund to be superseded and granting to the Appellant additional time in which to make the neces sary preparation to put the ninety cent rate into effect and denied a supersedeas from so much of the decree vacating and setting aside the restraining order and temporary injunction. The additional time above referred to expiring on the 15th day of November, 1912. That by reason of all the foregoing and in view of the presumption which obtains in favor of the validity of the ordinance of which complaint is made, it would be unjust to the consumers of gas in the City of Des Moines to now permit the Appellant herein to enjoin the said ordinance and delay the operation of the same until the final decision herein on appeal.

Tenth: Because under equity Rule 93 it was within the discretion of His Honor, Judge Smith McPher-

son, to dissolve the restraining order and temporary injunction theretofore granted and in the absence of a showing of abuse of said discretion, his action in the premises ought not be interfered with.

Eleventh: Because the Master, at page 109 of his report, finds:

> "While this case is close to the border line, I cannot say on the whole case that the evidence beyond any just and fair doubt, satisfies me that the rates will prove confiscatory, should the ordinance be put into effect and an actual test thereof be made."

Twelfth: Because the Master, at page 105 of his report, after stating certain existing conditions, finds:

> "These conditions lead me to believe that with economy and care, the cost (of making gas) may be reduced below sixty cents, as it was in the year ending February 28, 1909, without detriment to the service. At least, the future cost of gas is not clear and satisfactory to me. It is true, that in this matter we are entering the realm of prophecy, and none of us has that gift. **What a trial under the present rates would produce is not before us, and cannot be determined until it is so tried.**"

And again, on the same page, the Master finds:

> "That an increase of sales to existing customers would result in greater profits, is perfectly true. It would practically double the profits per M. C. F. on the increase. On new customers it ought to do the same, only it would at the same time, cause additional value to be added to the plant, however, it would increase the profits materially in the final result."

Thirteenth: Because the Master, after the most careful weighing of all the evidence introduced during the months of hearing, finds in effect, that in the absence of an actual test by trial of the rates prescribed in the ordinance complained of, it is impossible to determine whether Appellant's revenue from the sales of gas will be increased or diminished.

Fourteenth: Because the Master in his findings and report, has not only placed a valuation on Appellant's property, greatly in its favor, by allowing a large amount of appreciation in the item of real estate, but in addition thereto has included in said valuation the sum of approximately, $140,000 for operating capital.

Fifteenth: Because, if we substitute the value of Appellant's property, as finally allowed by the Master, to-wit: $2,100,000, for the amount used by the Master in his first illustration or estimate, on page 94 of his report, to-wit: $2,400,000, and then substitute 6 per cent for 8 per cent, the estimate would stand thus:

Total gross revenue, year ending December 31, 1910		$ 538,893.00
Operating expenses		335,082.00
Balance		$ 203,811.00
Depreciation at 6.67 cents per M. C. F. upon 531,991,000 M. C. F.		35,483.80
Net revenue for 1910		$ 168,327.20
This includes Valley Junction	$ 2,100,000	
At 6 per cent, is	126.000	
45,000 at 6 per cent is	2,700	128,700.00
Surplus		$ 39,627.20

And the estimate or illustration on page 95 would stand thus:

Total amount of gas sold during the ten months of the year ending Oct. 31, 1911 is		450,011,489
Total gas as per schedule No. 2, defendant's exhibit 30, November 1910	50,214,035	
Also for Dec. 1910	52,577,873	
Estimated increase 4.84 per cent of above	4,975,132	
	107,767,040	
Total		557,778,529
Less Valley Junction		7,000,000
Des Moines Gas		550,778,529
After eliminating the charges to operating expenses the cost is shown to have been at the rate of	61.73	
Add depreciation	6.67	
Total cost	68.40	
Net revenue per M. C. F. for 90c gas	21.60	118,968.16
6 per cent of $2,100,000.		126,000.00
Deficit, omitting Valley Junction		$ 7,031.84

Without pursuing this method throughout all of the illustrations and estimates made by the Master, it is sufficient to say that the same adjustments would produce the same, or substantially the same, decrease in the so-called deficit and if we were to use a de-

preciation figure of four cents per M. C. F., instead of the 6.67 cents, used by the Master, and which would be fully justified by the evidence, the deficits would disappear entirely. Then too, it should be remembered that in these estimates no account is taken of increased sales due to reduced price. This is shown conclusively on page 107 of the Master's report, where he says:

> "While reckoning under the valuations at the past rates will show a deficit, it must not be forgotten that there are certain elements therein that have not been demonstrated."

In other words, it is not pretended by the Master that these estimates represent what, even in his judgment, would be the results, if the rate prescribed by the ordinance was put into actual operation.

Sixteenth: Because, inasmuch as it is the settled policy of the Appellate Court to remand cases of this character for a practical test, where the line may be said to be close between remuneration and possible confiscation, to now permit the injunction to issue herein, might result in unnecessarily postponing action which may be required on the further hearing and decision by said court.

Seventeenth: Because every presumption must be indulged in favor of the Master's report, and it should not be modified or interfered with unless for some mistake or a prejudicial error which clearly appears. The application herein fails to point out any such error or mistake to support appellant's right to relief additional to that already provided for in the decree of the lower court.

Eighteenth: Because the appellant has failed to produce that degree or weight of evidence on the trial in the lower court as entitles it to longer arrest the operation of the ordinance of which complaint is made; and, further, because appellant is now attempting to support its said application for said injunction by the *ex parte* affidavit of its manager as to alleged earnings and operating expenses and the table of figures predicated thereon, covering a period of time subsequent to the trial and decision in the lower court, as will more fully appear by reference to the record herein.

Nineteenth: Because on the question of the value of appellant's property the Master was most liberal in its favor. This clearly appears by reference to the opinion of His Honor Judge Smith McPherson at page 9 thereof, wherein he says:

> "If the question were now for decision, I would have much doubt as to the item of working capital, $140,000.00. The Master was liberal with the Gas Company by allowing that item. I failed to find satisfactory evidence in this tremendous record, as to that item, although there is evidence bearing thereon. * * * * * I only mention this to show that the Master has not borne down on the Gas Company."

II.

BRIEF AND ARGUMENT IN SUPPORT OF RESISTANCE TO APPELLANT'S APPLICATION FOR AN ORDER TO MAINTAIN THE STAUS QUO, AND TO ENJOIN THE APPELLEES FROM PUTTING INTO EFFECT THE ORDINANCE RATE IN CONTROVERSY, PENDING THIS APPEAL.

Appellant petitions this court for an order to enjoin the appellees from putting into effect the ordinance rate in controversy, pending the appeal.

The application is predicated upon the theory that such an order is a proper one to maintain the *status quo*, as was done in the case of *Omaha & Council Bluffs Street Railway Company, et al. v. Interstate Commerce Commission*, et al., 222 U. S. 582; 56 Law Ed. 324, and other cases there cited.

The present application represents the second attempt on the part of the appellant since the decree of the court below to enjoin the enforcement of the ordinance passed by the city council of the city of Des Moines on the 27th day of December, 1910, which, by its terms, was to become effective January 1, 1911.

On the 14th day of November, 1912, an application in behalf of the appellant was presented to His Honor, Mr. Justice Van Devanter, for permission to supersede so much of the decree of the court below in the said suit as sets aside the restraining order and temporary injunction granted therein and requires the appellant on and after November 15, 1912, to put into effect the ordinance rate which is in con-

troversy in the said suit. Said application for said supersedeas was presented by counsel for the appellant and at which hearing, counsel for appellees were present. No formal order was entered in respect of said application,—the same being withdrawn. Such withdrawal being prompted, we have no doubt, by reason of the well settled rule that, neither a decree for an injunction nor a decree dissolving an injunction, is suspended in its effect by an appeal, although all the requisites for a supersedeas are complied with. And, that where the injunction has been dissolved, it cannot be reviewed, except by the new exercise of judicial power.

Hovey v. McDonald, 109 U. S., 150, 27 Law Ed., 888;

Slaughter House cases, 10 Wall., 273, 19 Law Ed., 915;

Knox County v. Harshman, 132 U. S., 14, 33 Law Ed., 249;

Leonard v. Ozark Land Co., 115 U. S., 465, 29 Law Ed., 445.

But, be that as it may, it is obvious that counsel for the appellant with a persistency worthy a better cause are attempting in every possible manner to prevent the operation of the decree of the court below before the hearing upon the appeal, even if it shall involve some inconvenience to the parties and considerable travel to and from Washington.

We recognize the rule that this court, in a proper case, has the power to modify a decree below dissolving an injunction in advance of a final hearing of an appeal on its merits, where it is found to be indispensable to maintain the *status quo* of the parties and to preserve its jurisdiction.

We note the provisions of Section 716 of the revised statutes of the United States, which confers upon this court the power to issue all writs not specially provided for by statute, which may be necessary for the exercise of its jurisdiction and agreeable to the usages and principles of law.

But we understand this court to have said that if such a practice were to be permitted, it would oftentimes involve an examination of the whole case and necessarily take much time of the court. These considerations created the necessity for the promulgation of the present equity Rule No. 93, which is as follows:

> "When an appeal from a final decree in an equity suit, granting or dissolving an injunction, is allowed by a justice or judge who took part in the decision of the case, he may, in his discretion, at the time of such allowance, make an order suspending or modifying an injunction during the pendency of the appeal, upon such terms as to bond or otherwise, as he may consider proper for the security of the rights of the opposite party."
>
> *Leonard v. Ozark Land Co.*, 115 U. S., 465, 468, 29 Law Ed., 445, 446.

In the instant case, the judge who took part in the decision, instead of continuing the preliminary injunction pending the appeal, dissolved the same, and took occasion to give special notice that no supersedeas other than that provided for with reference to costs and the refund of ten cents per thousand feet of gas in excess of the rate fixed by the ordinance in controversy, should be allowed.

The action of the lower court, it occurs to us, controls the question with which this court is concerned with respect to said application.

III.

We shall now take up and present additional reasons which, in our judgment, show that the appellant is not entitled to the relief which it asks in its said application.

Appellant rests its application for an order enjoining the appellees from putting into effect the ordinance rate in controversy, pending the appeal, upon substantially two grounds:

First. That the facts found by the Master demonstrate that the ordinance complained of will, in its operation, deprive the appellant of a fair return upon the value of its property.

Second. That no substantial hardship will result to any consumer of gas if the temporary injunction is continued in force; while, on the other hand, appellant may suffer great and irreparable injury if the same is set aside.

In support of these propositions, counsel attach to its application many pages of tabulations, computations and tables of figures in an effort to show that the Master and the court below erred in their findings and conclusions and, that on the whole, the ninety cent rate will deprive them of a just return upon their investment.

All these questions were fully and thoroughly covered in the months of hearing and weeks of argument before the Master and the lower court, and it does not now seem necessary to go over this ground again or to follow counsel further than to offer as a full and conclusive answer to all the claims

made, the following facts which have been established and stand out prominently in the record:

(a) The books of the company show a cash investment in this property, exclusive of earnings, to the amount of $168,255.56 and no more. While the total investment in the property, according to the books after reducing the amount by the depreciation figures used by the Master, did not exceed in round numbers $1,500,000.00, the stockholders have taken out in cash between $500,000 and $600,000 and the Master in his liberality now finds the value of the property to be $2,100,000. In other words, the owners of this property have put into it in cash and earnings in round numbers a total of $1,700,000; have taken out between $500,000 and $600,000, and have a property left, the value of which the Master has found to be $2,100,000.

(Hall's report, Exhibit 30, pages 2 to 30. The Master's report, pages 40-41.)

(b) The Master concludes that with economy and care the cost of manufacturing and distributing gas may be reduced below sixty cents, and both Lea and Baehr, witnesses for the complainant, agree with him. Lea finds that it will cost for 1911 in round numbers fifty-nine cents; 1912, fifty-eight cents; 1913, fifty-seven cents; 1914, fifty-six cents; 1915, fifty-five cents; 1916, fifty-four cents; 1917, fifty-three cents.

(Master's report page 105, complainant's exhibit 20, Lea's report page 110.)

(c) The Master finds and concludes:

That an increase in sales to present consumers would practically double the profit per M. C. F. on the increase.

That what a trial under the ordinance rates would produce cannot be determined, except upon actual test.

That while the computation made at past rates shows a deficit, there are certain elements therein that have not been demonstrated.

That as to the increase and use of gas by existing consumers the past is of little value either way on the subject.

That no estimates are made with reference to the increase from existing customers.

That he has been unable to reach any satisfactory conclusion as to the future cost of gas.

That "while this case is close to the border line I cannot say on the whole case that the evidence beyond any just and fair doubt satisfies me that the rates will prove confiscatory should the ordinance be put into effect and an actual test thereof be made."

IV.

As is usual in the trial of cases of this character, the question of value was the principal one. That is to say, the reasonable value of the property actually used and useful in connection with the manufacture and distribution of gas in the city of Des Moines, Iowa.

Volumes of testimony was taken on this subject, the testimony of many expert witnesses introduced and certain theories and methods of measuring such value advanced. It would not be practicable at this time to attempt anything like an analysis of the testimony of the several experts with respect to the value of the appellant's property. A discussion of that character would involve an investigation and examination of the entire record covering some six thousand pages. But this much may be said in connection with the Master's findings which will serve to prove that the decree of the lower court in the circumstances is in all its provisions, just and proper, and fully warranted by the record, and that the appellant was not entitled in the court below, nor is it entitled in this court, to have a preliminary injunction in its favor to longer suspend the operation of the ordinance in controversy.

During the investigation by the city council of the rates charged for gas by the appellant, and before the adoption of the ordinance in controversy, some correspondence was carried on between a member of the council and Jansen Haines, the then manager and now president of the Des Moines Gas Company, the appellant herein. This correspondence was collected and printed in book form and copies

mailed to patrons of the Gas Company throughout the city. A copy thereof was introduced in evidence in this case and identified as Complainant's Exhibits 7 to 14, inclusive, and Defendants' Exhibit 44.

In a letter under date of November 22, 1910, from said Haines to John MacVicar, a member of said council, appears, among other things, the following:

> "The gross revenue from the sale of gas for twelve months ended September 30, 1908, was $457,105.95; for twelve months ended September 30, 1909, was $491,944.49; and for twelve months ended September 30, 1910, was $526,293.50. The average annual gross revenue for the three year period ended September 30, 1910, was $491,781.31.
>
> "For the twelve months ended September 30, 1908, the operating expenses and taxes were $281,613.48; for the twelve months ended September 30, 1909, were $283,339.06; and for the twelve months ended September 30, 1910, were $345,282.43. The average annual operating expenses and taxes for the three year period ended September 30, 1910, were $303,411.66.

NET EARNINGS OF THE GAS COMPANY.

> "Deducting from the average annual gross revenue, for the three year period, the average annual expenditure for operating expenses and taxes, there remains an average annual net earning for the period of $188,369.65. From this sum there must be deducted for depreciation, the sum of $49,178.13, which sum is ascertained by taking ten per cent of the average annual gross revenue from the sale of gas. That this is no more than a reasonable allowance for depreciation will hereafter appear.

"This leaves $139,191.52 as the average annual NET AMOUNT RECEIVED BY THE GAS COMPANY FOR INTEREST AND PROFITS, WHICH AMOUNTS TO 8 PER CENT ON $1,739,094.

"The above amount of $49,178.13 deducted for depreciation is only 2.82 per cent upon this sum and cannot therefore be regarded as an unreasonable allowance for that purpose.

"However, I am clearly of the opinion that the present value of the company's property and assets is largely in excess of $1,739,894."

Again, under date of November 26, 1910, in a letter from said manager to said member of the council, is the following:

"Dear Sir:—In reply to your published letter of yesterday, copy of which I have not yet received, I beg to call you attention to my letter of the 22nd inst. to you, in which I submitted figures showing the gross revenue derived by this company from the sale of gas, together with figures showing the net revenue after deducting operating expenses, taxes and depreciation, and also computation showing that this amount of net revenue would yield but 8 per cent upon $1,739,894. I expressed the opinion that the present value of the plant and assets of the company was largely in excess of this sum. I assumed that you (and the council) would be interested in knowing the value of the property and the net revnue received under the present rate, as it is apparent that the question, as to what is a reasonable rate for gas, could only be determined from these facts."

V.

It is rather singular in this case to note that the appellant apparently did not have what might be said to be a fair conception of the value of its own property. A few days after the passage of the ordinance in controversy an application was made to the court below for a restraining order, which was granted. Following the granting of the restraining order, an application for a temporary injunction was set for hearing. The bill as originally exhibited contained the following in paragraph IV thereof:

> "Your orator, under and by virtue of its charter and articles of incorporation is empowered to construct, own, operate, and maintain gas works in the city of Des Moines and it has established, erected and owns, and is now maintaining and operating within the city of Des Moines, gas works, consisting of a manufacturing plant, holders, mains, pipes and a large amount of other property in the city of Des Moines, used in its business of manufacturing and distributing gas for illuminating and fuel purposes to consumers. The present value of its said property exceeds the sum of $2,700,000.00."

In Paragraph VI of said original bill, after stating the amount of the annual gross revenue, and the average annual operating expenses and taxes, covering the period of three years, and after deducting $49,178.13 for annual depreciation, it is charged and averred that there remains the sum of $139,191.52 as the annual net amount received by said company for an average of three years, which would amount to upon said valuation of its property 5.15 per cent annually.

At the time of the hearing on said application for a temporary injunction, the joint and several demurrers of the defendants in the said suit were interposed, when an amendment to the bill of complaint was filed, in which it was averred that the value of complainant's property was the sum of $4,092,000.00. Both the original bill as exhibited to the court below and the amendment thereto were verified by Jansen Haines, the then manager of the complainant company, and now president thereof.

VI.

An examination of the report of the Master and the opinion of the court below clearly show that the valuation placed upon the appellant's property for the purposes of this hearing was more than liberal. To begin with, the valuation of $2,100,000.00 found by the Master includes the sum of $140,000.00 for operating capital allowed upon the theory that in fixing the value of the appellant's property, the duplication method should be followed to a greater or less extent, and that a hypothetical plant as distinguished from the operating plant would be required to have as operating capital an amount of approximately $140,000.00. And, that therefore, this was a proper item to be considered on the subject of value.

The court below takes occasion to criticise this item in the opinion, at page 9 thereof, wherein he says:

> "If the question were for decision, I would have much doubt as to the item of working capital, $140,000.00. The Master was liberal with the Gas Company by allowing that item. I fail to find satisfactory evidence in this tremendous record, as to that item, although there is evidence bearing thereon. * * * * * I only mention this to show that the Master has not borne down on the Gas Company."

Moreover, the Master expressly states at page 109 of his report that,

> "The physical value as hereinbefore determined ($2,100,000.00) is reckoned upon the fact that the plant was in 'successful operation' when the ordinance was enacted, otherwise its value

> would be much less. The 'going value' is that enhancement which results from a well developed and paying business. This would result in reducing the estimated deficits for each year $24,000.00 and yield a return to the complainant of, at least, 6 per cent on $2,100,000.00."

This answers the suggestion of appellant that the Master has not given due consideration to the several items entering into and forming a part of appellant's gas works and property used in connection with the service. As a matter of fact the record discloses that the valuation placed upon the appellant's property of $2,100,000.00 is very liberal indeed.

VII.

In addition to what has already been said, the appellant's application herein should be denied:

First. Because both the Master and the Court below have found against it upon every question on which relief could be justly based.

Second. After a full hearing on the merits, the court below denied the very application presented by dissolving the restraining order and temporary injunction.

Third. Temporary injunctions being granted only when danger of irreparable injury is apparent, and the universal rule being that the court must exercise a sound judicial discretion in granting or refusing the same, no interference should now be had with the order and decree of the lower court in vacating and setting aside the injunction after hearing and trial.

Fourth. The findings of the Master have the force and effect of the verdict of a jury and no case of this kind will be found anywhere in the books in which a decree vacating and setting aside a temporary injunction based upon a Master's report has been rendered in which this court has continued such preliminary injunction pending the appeal.

Peter L. Kimberly v. Charles D. Arm, et al., 129 U. S., 512;

John T. Davis, et al., v. John H. Swartz, et al., 155 U. S., 636;

Des Moines Water Company v. City of Des Moines, 194 Fed. Rep., 557;

Camden v. Stuart, 144 U. S., 104, 119.

Fifth. The situation presented by appellant's application is ruled by the doctrine announced in the *City of Louisville v. Cumberland Telegraph & Telephone Co.*, 225 U. S., 430, 56, Law Ed., 1151.

Sixth. That the appellant is attempting to secure from this court the exercise of original jurisdiction in respect of a matter where this court does not have original jurisdiction, in that said appellant invokes the aid of this court to restrain or suspend the enforcement of an ordinance of the defendant city during the pendency of the appeal under the guise of an application to maintain the *status quo*.

VIII.

The application of the appellant does not present anything like the same facts as were disclosed by the record in the case of *Omaha & Council Bluffs Street Railway Company v. Interstate Commerce Commission, supra.* In that case, if we understand it rightly, the Commission had ordered into operation a rate below that which the railroad had theretofore received for the service. There was no practicable way by which the company could keep a record of the divers persons tendering fares or transfers at the reduced rates, nor by which it might demand reimbursement from its patrons in the event it should gain the appeal.

The operation of a street railway is so vastly different from the operation of a gas works that the reasons for an injunction to prevent enforcement of a schedule of rates in the former would have no proper place as applied to the latter.

The Gas Company has a regular list of patrons entered upon its books and the places of business or residences of each completely identified.

Even if we shall assume that appellant will succeed in this court, it would still be in position to add to the amount of the bills rendered its customers an amount which would represent that to which it was found entitled during the pendency of the appeal, just as the lower court has made provision in its decree for restitution by the company of the excess rate collected between January 1st, 1911, and November 15th, 1912, in the event of the affirmance of said decree by this court.

The fact that appellant is given the right to retain this latter amount pending the appeal ought to offset the demand for the right to continue to charge the excess rate pending the appeal.

IX.

The case of *Ex Parte Milwaukee v. Minnesota Railroad Company*, cited in the *Omaha & Council Bluffs Street Railway* case, merely recognizes the rule that where a case is properly in the supreme court by appeal, by the 14th section of the Judiciary Act, the right exists to issue any writ which may be necessary to render appellate jurisdiction effectual.

In this case the lower court had refused to approve a bond and allow a supersedeas, on the grounds that the sureties were non-residents of the district, and was before this court on petition for a mandamus to compel the district judge to approve the bond and allow a supersedeas.

While the court did not concur in the opinion of the district judge that the fact of the non-residence of the sureties was a sufficient reason for rejecting the bond, this court was not inclined to interfere by mandamus with the discretion of the judge in rejecting the bond offered for his approval. All that this case holds is, that where a case is properly in the supreme court, it has a right to issue any writ which may be necessary to render its appellate jurisdiction effectual.

Leonard v. Ozark Land Co., 115 U. S., 465, 29 Law Ed., 445, is also cited in said *Omaha & Council Bluffs Street Railway Company* case, in support of the right to restrain the enforcement of the order of the Interstate Commerce Commission pending the appeal.

In this case a decree had been entered in the lower court, by the terms of which the defendants were

perpetually enjoined from cutting or removing any timber from lands. The same judge who rendered the decree allowed the appeal and in doing so, directed that it should not operate to suspend or affect so much of the decree as enjoins the defendants from cutting or otherwise trespassing on the lands in controversy or removing staves or timber cut thereon.

The appellant moved the supreme court to vacate so much of the decree of the court below as qualified said appeal and prevents the same from superseding the decree and prevented the appellant from removing the staves made on the land in controversy by the entry of the decree in favor of the appellees.

This case recognizes the rule that the injunction ordered by the final decree was not vacated by the appeal.

As bearing upon the right of the appellate court to modify an injunction granted by a decree of the lower court in advance of a final hearing of an appeal on its merits, the court says:

> "This court no doubt has the power to modify an injunction granted by a decree below in advance of a final hearing of an appeal on its merits. An application to that effect was made to us at the October term, 1878, in the case of the *Sandusky Tool Company v. Comstock,* and finding that such a practice, if permitted, would oftentimes involve an examination of the whole case, and necessarily take much time, we promulgated the present Equity Rule 93, which is as follows:
>
> " 'When an appeal from a final decree in an equity suit, granting or dissolving an injunction, is allowed by a justice or judge who took part in the decision of the cause, he may, in his dis-

cretion, at the time of such allowance, make an order suspending or modifying an injunction during the pendency of the appeal upon such terms as to bond or otherwise, as he may consider proper for the security of the rights of the opposite party.'

"Here the judge who heard the case allowed the appeal, and instead of suspending or modifying the injunction, he took occasion to give special notice that it was to continue in force, and if the facts are correctly stated in his opinion, it was quite proper he should do so."

This case not only does not support the appellant's application in the instant case, but on the contrary supports the resistance of the appellees thereto, in that it states clearly the reasons for the promulgation of Rule 93 and affirms the doctrine that where the court below exercises a discretion with respect to continuing or dissolving a temporary injunction, such discretion will not be reviewed or set aside except in a case where it is necessary to the exercise of appellate jurisdiction.

Re Claasen, 140 U. S., 200, 35 Law Ed., 409, states the principle that the appellate court has power to issue a writ of supersedeas under Section 716, U. S. Rev. Statutes, and that a justice of said court has authority not only to allow a writ of error but also to grant a supersedeas in a criminal case.

Re McKenzie, 180 U. S., 536, 45 Law Ed., 657, the court reaffirms the doctrine that under Section 716 of the Rev. Statutes it has the power to issue a writ of supersedeas under special circumstances and in furtherance of justice.

U. S. v. Shipp, 203 U. S., 563, 51 Law Ed., 319, is to the same effect.

X.

Inasmuch as the court below has dissolved the restraining order and temporary injunction, after a hearing of the said suit on the merits, and that Mr. Justice Van Devanter, who allowed the appeal, made no order with respect to continuing said temporary injunction during the pendency thereof, we submit that this court is now without power or jurisdiction in the premises.

The appellate court will interfere in those cases only where it is necessary to the exercise of its jurisdiction and agreeably with the usages and principles of law.

Merrimac River Savings Bank v. Clay Center,
219 U. S., 527; 55 Law Ed., 320.

The appellant is not, as a matter of fact, attempting to maintain the *status quo* by this application. On the contrary, it is endeavoring thereby to suspend the operation of an ordinance pending the appeal where the question presented has been determined adverse to it in the lower court. If such an application may be entertained, then, of course, in every case in which an appeal may be prosecuted and incidentally involves the dissolution or continuance of a temporary junction, this court will be called upon to review decrees of that character and to exercise new judicial powers in advance of the hearing on appeal.

It is our contention that such proceedings are not contemplated by the statutes or rules of practice of this court.

We respectfully submit that under the foregoing facts and authorities the application of the appellant for an injunction to restrain the operation of the ordinance in controversy should be denied.

Respectfully submitted,

ROBERT O. BRENNAN,

H W. BYERS,

Solicitors for Appellees.

Supreme Court of the United States.

No. 75
OCTOBER TERM, 1913.

Office Supreme Court, U. S.
FILED
MAR 28 1914
JAMES D. MAHER
CLERK

DES MOINES GAS COMPANY,
Appellant,

vs.

CITY OF DES MOINES *et al.*

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF IOWA.

BRIEF AND ARGUMENT FOR APPELLANT.

DIVISION I.

NATHANIEL T. GUERNSEY,
Solicitor for Appellant.

GEORGE H. CARR,
of Counsel.

Stillman Appellate Printing Co., 51 Broad St., N. Y.

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Supreme Court,

OF THE UNITED STATES.

No. 397.

DES MOINES GAS COMPANY,
Appellant,

against

CITY OF DES MOINES, *et al.*,
Appellees.

Appeal from the District Court of the United States for the Southern District of Iowa.

BRIEF AND ARGUMENT FOR APPELLANT.

DIVISION I.

Statement.

The appellant is engaged in the business of manufacturing, distributing and selling gas in the city of Des Moines. The plant was constructed in 1864, and was operated by the Capital City Gas Light Company until March 1, 1906 (transcript, page 41), when the appellant was organized. It, immediately after its organization, acquired the property and has since operated it.

The price of gas in the city of Des Moines was for the years 1896 and 1897, $1.30 per m. c. f.; for the years 1898 and 1899, $1.25; for the years 1900 and 1901, $1.20; for the years 1902, 1903 and 1904, $1.15; for the year 1905, $1.10, and for the years 1906 to 1910 inclusive, $1.00; with a provision authorizing an additional 10 cents per m. c. f. if the bills for each month were not paid on or before the 15th of the succeeding month.

On the 27th of December, 1910, the ordinance in question (transcript, page 113) was introduced, reducing the price to be charged for gas from $1.00 to 90 cents per m. c. f., on and after January 1, 1911. At the same meeting this ordinance was finally adopted, under a suspension of the rules.

Thereupon, the appellant filed its bill asserting that the 90 cent rate would not afford to it a fair return upon the value of its property used and useful in the performance of this service. The case was referred to a master, who, after a very exhaustive hearing, reported his conclusions upon the law and facts, and recommended that the bill be dismissed without prejudice (transcript, page 109).

The master found that the value of the property on January 1, 1911, was in the aggregate $2,540,000. This included going value, which he estimated at $300,000, and enhancement on account of paving over mains where the streets had not been paved when the mains were laid, which he estimated at $140,000. His conclusion was that if these two elements of value should be included, a decree for the complainant was imperative, but because he determined that they should be excluded, he recommended that the bill be dismissed without prejudice.

The court below held with the master as to the paving item, and as to the matter of going value that this factor should be taken into account, and further determined that it was included in an amount of $2,240,928 which the court understood to be the value found by the master. This was a misapprehension. This sum was not the value found by the master, nor did it include the going value item.

The court below confirmed the master's report, but entered a decree dismissing the bill "with prejudice" (transcript, page 173). The master determined with great detail the facts not only as to value, but as to operating expenses, and sales, and estimated the sales for four years in the future.

The fundamental questions which will be presented here are:

(a) Should the paving item have been excluded?

(b) Should the going value item have been excluded?

(c) Upon the facts as found by the master and confirmed by the court below, was the appellant entitled to a decree upon the merits?

(d) If it was not, did the court err in dismissing the bill upon the merits?

The brief will be divided into two divisions. In the first these fundamental questions will be urged; in the second the facts will be argued, not for the purpose of inducing the court to disturb the findings that have been made, but for the purpose of showing that these findings are so clearly established that they may be accepted for the purposes of this case.

SPECIFICATIONS OF ERRORS RELIED UPON.

First. That the court erred in adjudging and decreeing that the bill of complaint in the said cause be dismissed with prejudice.

Second. That the court erred in adjudging and decreeing that the complainant pay the costs of the said suit and in awarding execution therefor.

Third. That the court erred in adjudging and decreeing that the bill of complaint in the said cause be dismissed.

Fourth. That the court erred in adjudging and decreeing that complainant be denied the relief prayed for in its bill of complaint.

Fifth. That the court erred in refusing to adjudge and decree that the ordinance of the city of Des Moines of the 27th of December, 1910, complained of in complainant's bill of complaint, is and was invalid, and void, and erred in refusing to permanently enjoin its enforcement.

Sixth. That the court erred in not adjudging and decreeing that the rates fixed in said ordinance of the city of Des Moines, of December 27, 1910, were and are confiscatory of complainant's property.

Seventh. That the court erred in adjudging and decreeing that the master's report should be approved.

Thirteenth. That the court erred in adjudging and decreeing in the fourth paragraph of the said decree:

> "At any time on and after three years from this date, complainant, its successors or as-

signs, may on motion reinstate this case with all the pleadings and evidence now on file, with the same and like effect as though filed for such subsequent hearing. And each party may then file such additional pleadings and take and file such additional evidence as to each party may be deemed advisable."

Relating to the Enhanced Value Due to the Enhanced Cost of Reproducing Mains Located in Paved Streets.

Fourteenth. That the court erred in adjudging and decreeing that the estimated cost of reproduction, less depreciation, when taken as a measure of value, is not such estimated cost as of the date of the valuation and subject to the conditions which then existed.

Fifteenth. That the court erred in adjudging and decreeing that from the amount of $2,240,928 (which the master found to be the cost of reproducing the physical property, less depreciation, without taking into account the element of value usually known as going value) there should be deducted the sum of $140,000, because this did not represent an expense incurred in the original construction of the property; said $140,000 being the estimated additional cost, less depreciation, which would be incurred on account of removing and replacing, paving in the reproduction of mains in streets which were paved at the date of the valuation, but were not paved when the mains in them were originally laid.

Sixteenth. That the court erred in adjudging and decreeing that complainant is not entitled to earn a fair and reasonable return upon the present

value of that portion of its investment and property which consists of mains under paved streets, where the pavement was put down after the mains were laid.

Seventeenth. That the court erred in adjudging and decreeing that the twelfth exception of the complainant to the report of the special master in the said cause be overruled, which exception was as follows:

> "Twelfth. That the master has in said report stated and certified that there should be deducted from what is called the 'total physical value' as found by him, the sum of $140,000, representing the cost of removing and replacing pavements, where pavements existed over the mains at the date as of which the valuation is made, but where no such pavements existed at the dates when the mains were laid; whereas, the master ought to have found that no deduction should be made on this account and that the value of the mains should be determined with reference to existing conditions and not with reference to the conditions which existed at the time the mains were laid."

Eighteenth. That the court erred in adjudging and decreeing that the thirteenth exception of the complainant to the report of the special master in the said cause be overruled, which exception was as follows:

> "Thirteenth. That the master has in said report stated and certified as to the said item of $140,000:
>
> > 'But where pavements are laid after the mains are installed, they have expended no money in taking up and replacing pavements. An allowance, therefore, makes reproduction the ultimate question, and not the reasonable value of the mains, unless

it further appear that the value of the mains are enhanced thereby to the extent of the cost of taking up and replacing pavements, which is not shown in this case. When the whole evidence is considered, the contrary is shown';

whereas, the master ought to have found that the value of the mains in question as of the date of the valuation is determined, not by what may have been expended in installing the said mains but by what it would cost to reproduce them, less the proper charge on account of depreciation, and ought to have found that changes in conditions since the mains were laid resulting in enhancing the cost of reproducing them, result in corresponding enhancements in the value of the existing mains, and ought to have found that the evidence which shows that because of placing of pavement over these mains, the cost of reproducing them would be enhanced $140,000, showed that the value of these mains had been enhanced."

Nineteenth. That the court erred in adjudging and decreeing that the fourteenth exception of the complainant to the report of the special master in the said cause be overruled, which exception was as follows:

"Fourteenth. That in the consideration of the said item of $140,000, the master has in his said report adopted as the basis for determining the present value of the mains in question as to the matter of paving, their original cost less depreciation, and as to other items, their cost of reproduction, less depreciation; whereas, he should, in order to ascertain present value, in view of the difference in the conditions, existing at present and when said mains were laid, have consistently applied the cost of reproduction, less depreciation, as to all of the items going to the value of the mains."

Relating to Going Value.

Twentieth. That the court erred in adjudging and decreeing that the master found that the value of the complainant's property is $2,240,928 and should have determined that the master found that the said amount represented the value of the property in question exclusive of the item of going value found by the master to be $300,000, and that the master found that the total value of the property in question was the sum of $2,540,000.

Twenty-first. That the court erred in adjudging and decreeing that the eighteenth exception of the complainant to the report of the special master in the said cause be overruled, which exception was as follows:

> "Eighteenth. That the master has, in said report, stated and certified that:
>
> > 'The evidence followed strictly might require me to make it higher, could my mind rest satisfied that the "Going Value" of this concern is worth more, but I cannot feel satisfied that such is the case and regard $300,000 as every dollar it is worth over and above its physical value, and in my judgment, it is worth that much more than a plant would be that had to develop its business;'
>
> whereas, the master ought to have found the said item of going value to be not less than the sum of $530,932, as clearly shown by the preponderance of the evidence."

Twenty-second. That the court erred in adjudging and decreeing that the nineteenth exception of the complainant to the report of the special mas-

ter in the said cause be overruled, which exception was as follows:

> "Nineteenth. That the master has in said report stated and certified:
>
> > 'The opinion in the recent case of the Cedar Rapids Gas Co. vs. Cedar Rapids, adds additional emphasis thereto. Not only so, but it also renders it extremely doubtful that "Going Value" will be included in valuation of such a plant as the basis of return, beyond the fact that it is in "successful operation." That would exclude the sum of $300,000 estimated in this case, on the grounds that when the ordinance was enacted, it already possessed a well developed and paying business.
> >
> > In my judgment, after considering the able and thorough arguments of counsel, that it is decisive of the question, and holds that "Going Value" should not be considered in determining the basis upon which the complainant is entitled to have its return reckoned, and feel that it is my duty to so state;'
>
> whereas, the master ought to have found that the said opinion of the Supreme Court of the United States does not hold that going value should be excluded in determining the basis upon which the complainant is entitled to have its return reckoned, but on the contrary, recognizes the fact that going value should be considered in determining the said basis."

Twenty-third. That the court erred in adjudging and decreeing that the twentieth exception of the complainant to the report of the special master in the said cause be overruled, which exception was as follows:

> "Twentieth. That the master has in said report stated and certified, in substance, that

the fact that the property in question is a going concern, characterized by an established business, with a large number of consumers attached to it, and a developed business, should not be taken into account; whereas, the master ought to have found that in ascertaining the value of the complainant's property upon which the rate of return afforded by the ordinance in question should be computed, all of the elements affecting that value should be taken into account, including whatever is contributed by the fact of the connection of the items, making a complete and operating plant."

Twenty-fourth. That the court erred in adjudging and decreeing that the twenty-first exception of the complainant to the report of the special master in the said cause be overruled, which exception was as follows:

"Twenty-first. That the master has in said report stated and certified in effect that the value of the complainant's property as of the date of the inquiry, upon which its return should be computed, is the mere cost of purchasing the land, constructing the buildings, putting in the machinery and installing the mains, meters and services with the working capital—in other words, the mere cost of reproducing the physical property, less depreciation; whereas, the master ought to have found that in order to ascertain said value there must be taken into account the additional value created by the fact of many connections with buildings, and actual earnings, including whatever is contributed by the fact of the connection of the items making up a complete and operating plant."

Twenty-fifth. That the court erred in adjudging and decreeing that the twenty-second exception of

the complainant to the report of the special master in the said cause be overruled, which exception was as follows:

> "Twenty-second. That the master has in said report in effect, stated and certified that the item designated by him as 'going value' is something separate and apart from the physical property; whereas, he ought to have found that it is an element contributing to the value of each tangible part of the property and that its existence is solely as a characteristic of the structure and that the structure is a structure whose value is affected by the fact that it is in use."

Relating to a Fair Return.

Thirty-second. That the court erred in adjudging and decreeing that the rate of return to which the complainant is entitled is not a matter of fact which may be shown by testimony with the same definiteness and certainty as other controverted matters of fact.

Relating to the Master's Conclusions.

Fifty-seventh. That the court erred in adjudging and decreeing that the fifty-eighth exception of the complainant to the report of the special master in said cause be overruled, which exception was as follows:

> "Fifty-eighth. That the master has in said report stated and certified that:
>
> > 'Should the court hold that the $140,000 for taking up and replacing mains where none existed at the time the mains were laid, then a decree for the complainant would be imperative, should "going value" be included in the basis for a return;'

whereas the master ought to have held that both the $140,000 item referred to and going value should be included in the basis for a return, and ought to have found that a decree for the complainant is imperative."

Fifty-eighth. That the court erred in adjudging and decreeing that the fifty-ninth exception of the complainant to the report of the special master in said cause be overruled, which exception was as follows:

"Fifty-ninth. That the master has in said report stated and certified that:

'Should the court hold that "salaries general" and the contribution to the Greater Des Moines Committee be included in the future cost of gas, then a like result should follow. So, also would rate regulation require a like result, should it be held a proper matter to be considered and 2 cents per M. C. F. be allowed therefor;'

whereas, the master ought to have found that the said items are necessarily included in the future cost of gas, and therefore he should have found that a decree for the complainant is imperative."

Fifty-ninth. That the court erred in adjudging and decreeing that the fiftieth exception of the complainant to the report of the special master in said cause be overruled, which exception was as follows:

"Fiftieth. That the master has in said report stated and certified as a conclusion of law that:

'This action having been brought and a temporary injunction granted restraining the enforcement of the ordinance without having first tried the effect of the rates there-

> in prescribed, the complainant must establish by clear and satisfactory evidence that such rates are inadequate and confiscatory, and if upon the whole evidence there remains a reasonable doubt of the correctness of complainant's contention, then the bill should be dismissed without prejudice to a future action, and complainant required to try the same before instituting another action;'
>
> whereas, the master ought to have found as a matter of law, that the complainant is only bound to sustain the correctness of the ultimate facts upon which its contention is founded by clear and satisfactory evidence."

Sixtieth. That the court erred in adjudging and decreeing that the fifty-first exception of the complainant to the report of the special master in the said cause be overruled, which exception was as follows:

> "Fifty-first. That the master has in said report stated and certified as a conclusion of law that:
>
> > 'If, however, upon the whole case, there remains no reasonable doubt of the correctness of complainant's contention that the rates prescribed by the ordinance, will not afford an adequate rate of return, either in whole or in part, then it is entitled to have the injunction made perpetual, and the ordinance annulled as confiscatory;'
>
> whereas, the master ought to have found as a conclusion of law that if upon the whole case the correctness of complainant's contention that the rates prescribed by the ordinance will not afford an adequate rate of return, either in whole or in part, appears by clear and satisfactory evidence, then it is entitled to have the injunction made perpetual and the ordinance annulled as confiscatory."

Sixty-first. That the court erred in adjudging and decreeing that the sixty-sixth exception of the complainant to the report of the special master in said cause be overruled, which exception was as follows:

> "Sixty-sixth. That the master has in said report stated and certified that:
>
> > 'While this case is to the border line, I cannot say on the whole case that the evidence, beyond any just and fair doubt, satisfies me that the rates will prove confiscatory should the ordinance be put into effect and an actual test thereof be made;'
>
> whereas, the master ought to have found and certified that there is no evidence which tends to indicate or which could afford the basis for a fair assumption that there will be any material increase in the consumption of gas by existing consumers sufficient to alter or modify the results of operation under the ordinance in question as found; and ought to have found further that beyond any just or fair doubt the ordinance in controversy if enforced will be confiscatory in its effect."

Sixty-second. That the court erred in adjudging and decreeing that the sixty-third exception of the complainant to the report of the special master in said cause be overruled, which exception was as follows:

> "Sixty-third. That the master has in said report erred in finding that the testimony does not show clearly and satisfactorily that the rates fixed by the proposed ordinance will not afford to the complainant a fair return upon the present actual value of the property constituting its investment and would not afford

such return upon such value at the date when the ordinance in question was to go into effect."

Sixty-third. That the court erred in adjudging and decreeing that the sixty-fourth exception of the complainant to the report of the special master in the said cause be overruled, which exception was as follows:

"Sixty-fourth. That the master has in said report in effect certified and found that the material question is whether in the remote future the rates fixed by the ordinance in controversy may not afford to the complainant a fair return; whereas the only material question is whether those rates at the time the said ordinance purported to go into effect, and at the present time will afford to the complainant a reasonable and fair return upon the value of its property devoted to the use of the public."

Sixty-fourth. That the court erred in adjudging and decreeing that the sixty-fifth exception of the complainant to the report of the special master in said cause be overruled, which exception was as follows:

"Sixty-fifth. That the master has in said report stated and certified that there should be a decree in this case dismissing the complainant's bill without prejudice; whereas, the master ought to have found that there should be a decree annulling the ordinance in controversy."

Sixty-fifth. That the court erred in adjudging and decreeing that the master found that a 90c. rate is sufficiently high for a sufficient return to the gas company, and should have found that the

master determined that the testimony was not sufficient to enable him to find whether said rate would be confiscatory or not; and that therefore the master recommended the bill should be dismissed without prejudice to permit a trial of the rates.

Sixty-sixth. That the court erred in adjudging and decreeing that the bill of complaint in the said cause be dismissed with prejudice upon the merits. If it should be finally held that the complainant is not entitled to a decree as prayed, still the bill should not be dismissed upon the merits, but should be dismissed without prejudice to the right of the complainant to institute another suit if a trial of the rates in question should warrant it.

BRIEF OF ARGUMENT.

I.

The facts found by the master.

The testimony showed exhaustively the history of the plant for a long term of years. The master held that the facts must be established by the appellant beyond a reasonable doubt.

The salient facts found by his report were:

(a) That the reasonable value of the appellant's property at the time of its use by the public (transcript, page 60, $2,240,928 plus, transcript, page 63, $300,000) was $2,540,000.

> (The statements of the court that the master found the value to be $2,240,928 and that this sum included the the item of $300,000 on account of going value (transcript, pages 165-166) are mistakes of the court below as to what the master determined. See *infra*, page 61.)

(b) That this total included $300,000 on account of what is known as going value.

(c) That this total further included $140,000, the cost of removing and replacing paving in reproducing the property, which it had not been necessary to remove or replace when the plant was originally constructed.

(d) As to fair return that "the evidence in this case clearly justifies 8 per cent. under the rule established in the *Consolidated Gas case*," and that

"really under the circumstances 6 per cent. of return therein would be a greater return accordingly than 8 per cent. in the plant and business of the complainant herein." (Transcript, page 73.)

(e) That at the old $1.00 rate the appellant did not earn a fair return in the year 1910, and that taking into account the probable increased sales, the appellant would not earn a fair return at the new rate in either of the years 1911, 1912, 1913, or 1914. (Transcript, pages 98, 103.)

II.

Some fundamental propositions stated, but not discussed.

(a) At the time in question the city of Des Moines had the power to establish reasonable rates to be charged by appellant for gas sold and distributed in the city.

Code of Iowa, 1897, Supplement, Sections 724, 725.

(b) Rates so established must be sufficient to afford to the appellant a fair return upon the value of its property.

The Minnesota Rate Cases, 230 U. S. 352, 434;
Smyth vs. Ames, 171 U. S. 361;
San Diego Land and Town Company vs.

National City, 174 U. S. 739;
San Diego Land and Town Company vs. Jasper, 189 U. S. 439;
Stanislaus County vs. San Joaquin, etc., Company, 192 U. S., 201;
Knoxville vs. Knoxville Water Company, 212 U. S. 1;
Willcox vs. Consolidated Gas Company, 212 U. S. 19.

(c) A fair return, broadly speaking, is a return which is relatively equal to what money devoted to other like investments will earn.

See the cases above cited.

(d) The value to be ascertained is the fair value of the property used in performing the public service.

See many of the cases above cited.

(e) The appellant was bound to establish each ultimate fact necessary to sustain a decree in its favor by clear and satisfactory evidence.

See the cases above cited.

In holding the appellant bound to establish these facts beyond a reasonable doubt (transcript, paragraph 10, page 98; *Id.*, next to last paragraph, page 107), the master went beyond the established rule.

III.

The item of paving.

The depreciated cost of reproduction included $305,870 as the cost of removing and replacing pavements (transcript, page 61) from which $140,000 was deducted, because portions of the streets were unpaved when the mains were laid.

(a) The character of this item is clear.

It is an expense incident to excavation and back-filling.

(b) The cost represented by this item is inevitably a part of the cost of reproduction.

(c) This factor must be taken into account in arriving at present value.

Present value is determined by present conditions and is distinguished from cost, which is determined by original conditions.

It is the fact that value, not cost, controls which requires depreciation as well as appreciation to be taken into account.

The illogical confusion of cost and value has depreciated by 14.7% or $150,382.47 the item of $1,023,010 representing the value of the mains (transcript, page 128, transcript, page 59), and then has further deducted $140,000, making a total deduction of $290,382.47, or roughly, 29%.

This item should not have been deducted.

Willcox vs. Consolidated Gas Company, 212 U. S. 19;
Consolidated Gas Company vs. New York, 157 Fed. 849;
Omaha vs. Omaha Water Company, 218 U. S. 180;
Steenerson vs. Great Northern Railway Company, 69 Minn. 353;
State vs. Minneapolis and St. Louis Railroad Company, 80 Minn. 191;
Cotting vs. Kansas City Stock Yards, 82 Fed. 850, 854;
People ex rel. Kings County Lighting Company vs. Willcox, et al., 156 App. Div. (N. Y.) 603; 141 N. Y. S. 677.

The case of

Cedar Rapids Gas Light Company vs. City of Cedar Rapids, 144 Iowa 426,

does not hold the contrary.

IV.

The Court erred in its conclusion that the total of $2,240,928 was stated by the master as the value of the plant, and in the conclusion that this included the item of $300,000 on account of going value.

Transcript, pages 53, 54, 57, 59, 60, 63, 105, 91, 99, 100 and 109.

V.

The item of going value.

The master used this term in its established sense (transcript, page 63).

It is "an element contributing to the value of each tangible part."

> *Omaha vs. Omaha Water Company,* 218 U. S. 180.

(a) The Cedar Rapids case.

This court did not hold in

> *Gas Company vs. Cedar Rapids,* 223 U. S. 655,

that this item should be disallowed.

It is demonstrated from the items stated by the Iowa court in its opinion in this case that both going value and paving over mains were allowed.

(b) The authorities all recognize going value as an element in the value of such a property.

> *National Water Works vs. Kansas City,* 62 Fed. 853;
>
> *Omaha vs. Omaha Water Company,* 218 U. S. 180;
>
> *Public Service Gas Company vs. Board of Public Utility Commissioners, et al.,* 87 Atl. 651 (not yet officially reported);
>
> *People ex rel. Kings County Lighting Company vs. Willcox, et al.,* 156 App. Div. (N. Y.) 603; 141 N. Y. S. 677;

Monongahela Water Company's case, 223 Pa. St. 323;

Appleton Water Works Co. vs. Railroad Commission of Wisconsin, 142 N. W. 476 (not yet officially reported);

Gloucester Water Company vs. City of Gloucester, 179 Mass. 365;

Norwich Gas Company vs. City of Norwich, 76 Conn. 565;

Spring Valley Water Works vs. City and County of San Francisco, 124 Fed. 574;

Spring Valley Water Company vs. City and County of San Francisco, et al., 165 Fed. 657;

Kennebec Water District vs. City of Waterville, 97 Me. 185;

Galena Water Co. vs. City of Galena, 74 Kan. 644;

Town of Bristol vs. Bristol and Warren Water Works, 23 R. I. 274;

Newburyport Water Co. vs. City of Newburyport, 168 Mass. 541;

Venner vs. Urbana Water Co., 174 Fed. 348;

Spring Valley Water Works vs. City and County of San Francisco, 192 Fed. 137;

Bonbright et al. vs. Geary et al., 210 Fed. 44.

(c) The rule is the same in rate cases and condemnation cases.

Omaha vs. Omaha Water Company, 218 U. S. 203.

The word "property" describing what is protected in condemnation cases involving the fifth amend-

ment, and in confiscation cases involving the fourteenth amendment, means the same thing in each amendment.

Willcox vs. Consolidated Gas Company, 212 U. S. 19;
Monongahela Navigation Company vs. United States, 148 U. S. 312;
Fairbanks vs. United States, 181 U. S. 283;
Minnesota Rate Cases, 230 U. S. 352.

VI.

What is a fair return?

For the distinction between a reasonable rate and a fair return, see

Public Service Gas Company vs. Board of Public Utility Commissioners, et al., 87 Atl. 651 (not yet officially reported).

It will vary under varying conditions.

Willcox vs. Consolidated Gas Company, 212 U. S. 19, 48.

What it is, is a question of fact, to be determined by the testimony in each case.

Gas Light Company vs. Cedar Rapids, 144 Ia. 426, 448.

Under the rule in the *Consolidated Gas case,* 8% was justified by the evidence here (transcript, page 73). A public utility must constantly increase its investment and must pay for the new money required, what such money is worth in the market.

VII.

Upon the facts found, the complainant was entitled to a decree upon the merits in its favor.

The master required each fact to be established beyond a reasonable doubt.

The testimony was exhaustive, covering the history of the property for twenty-five years, and left nothing open to conjecture. Under such circumstances, what will happen in the immediate future is not, within reasonable limits, a matter of speculation but is definitely established.

The fact that capital is attracted to this business by rates not much in excess of those afforded by well-secured loans, shows that experience has demonstrated this to be a stable business.

No hypothesis applied by the master to the facts indicated that the property would earn a fair return. He stated (transcript, page 108) that if the two items of paving and going value should be included "a decree for the complainant would be imperative."

(a) The estimates as to future net revenue and deficits.

These showed upon every hypothesis a failure to earn a fair return (transcript, pages 98, etc.). The case is not on the border line. The deficits were large.

(b) Future increased sales.

In making his estimates, the master took into account normal future increases in sales. .

The history of the plant demonstrates that increases in sales in amounts sufficient to earn a fair return would have been impossible.

(c) The finding that increased sales must be due to increased population.

The facts show and the master determined (transcript, pages 89 and 90) that substantial increases in sales could only come from increases in population.

(d) The population necessary to a fair return.

To sell gas there must be persons to buy it.

The population was insufficient to afford a market for the gas necessary to earn a fair return.

(e) The plant had not the capacity to manufacture enough gas to afford a fair return.

Transcript, pages 87 and 88.

A large additional investment would have been required, increasing the amount upon which the return must be earned.

VIII.

The inevitable conclusions from the established facts.

Computations predicated upon the facts found by the master demonstrate that upon no reasonable hypothesis could a fair return be anticipated.

IX.

What does the clear and satisfactory evidence rule require?

This rule relates to the testimony necessary to establish the ultimate facts.

Where facts have been established by testimony of this character, the rule may not be invoked to discredit sound and legitimate inferences from them.

> *Willcox vs. Consolidated Gas Company,* 212 U. S. 19;
> *Lincoln Gas Company vs. Lincoln,* 223 U. S. 349,

both recognized the proposition that these facts may be established without evidence deduced from a trial of the rates.

X.

The peculiar nature of the decree.

The court erred in dismissing the bill upon the merits and then in attempting to provide for a reopening of the case after three years.

> *Bronson vs. Schulten,* 104 U. S. 410.

XI.

The situation so far as the appellant is concerned.

If the appellant is not entitled to a decree in its favor upon the merits, it is entitled to an opportunity to try the rates and to definitely establish the facts upon which the rights of the parties depend.

Stanislaus County vs. San Joaquin C. & I. Company, 192 U. S. 201;
Knoxville vs. Knoxville Water Company, 212 U. S. 1;
Willcox vs. Consolidated Gas Company, 212 U. S. 19;
Cedar Rapids Gas Company vs. Cedar Rapids, 223 U. S. 655;
Minnesota Rate Cases, 230 U. S. 352;
Missouri Rate Cases, 230 U. S. 474;
In re City of Louisville, 231 U. S. 639;
City of Louisville vs. Cumberland Telephone & Telegraph Co., 231 U. S. 652;
Northern Pacific Railway Company vs. North Dakota, 216 U. S. 579.

ARGUMENT.

I.

The facts found by the master.

The testimony introduced before the master, in addition to other matters, covered with great detail the history of the property, its cost, the cost of its reproduction, the amount of depreciation, its capitalization, stock and bonds, and its earnings and operating expenses. In connection with the showing as to operating expenses, there was a detailed analytical showing of each item of the operating costs for the five (5) years ending December 31, 1910, and for the first ten (10) months of the year 1911, down to less than one (1) month prior to the submission of the case to the master. Among other things the master determined:

(a) That the reasonable value of the appellant's property at the time of its use by the public (transcript, page 60, $2,240,928, plus transcript, page 63, $300,000) was $2,540,000.

(The statements of the court that the master found the value to be $2,240,928 and that this sum included the item of $300,000 on account of going value (transcript, pages 165-166) are mistakes of the court below as to what the master determined. See *infra*, page 61.)

(b) That this total included $300,000 on account of what is known as going value.

(c) That this total further included $140,000, the cost of removing and replacing paving in reproducing the property, which it had not been necessary to remove or replace when the plant was originally constructed.

(d) As to fair return that "the evidence in this case clearly justifies 8 per cent. under the rule established in the Consolidated Gas case" and that "really under the circumstances 6 per cent of return therein would be a greater return accordingly than 8 per cent in the plant and business of the Complainant herein" (transcript, page 73).

(e) That the costs in cents per thousand cubic feet, after making deductions for debatable items of operating expenses, and including 6.67 cents which the master determined to be proper for depreciation, and the corresponding net revenue at a 90 cent rate, were for various periods as follows:

	Cost in cents per m. c. f.	Net return in cents per m. c. f.
1910, operating costs (transcript, page 80, paragraph 6),	69.65	20.35

Average for five (5) years ending December 31, 1910, (transcript, page 80, paragraphs 4 and 8),	69.25	20.75
Lowest year ending February 28, 1909 (transcript, page 80, paragraph 10),	67.10	22.90
1911—first ten (10) months up to submission of case to master (transcript, page 80, line 2),	68.40	21.60

(f) That the sales of gas for the year 1910 were 521,486,354 cubic feet (transcript, page 80, paragraph 7), which would afford net revenues on the respective bases above set out, as follows:

1910, operating costs (transcript page 80, paragraph 7),	$106,122.45
Five year average (*Id.*, page 80, paragraph 8),	108.208.50
Lowest year (*Id.*, page 80, paragraph 10),	119,420.35
1911, first ten (10) months (*Id.*, page 80, paragraph 9),	114,912.00

(It will be noted that these returns vary from 4.2% to 4.6% of the value of $2,540,000.00.)

(g) That "more and more people were using gas each year until the close of the year 1910 there was a meter to every 4.50 of its people, and that during the last five years there was a marked decrease in the gain, except for the year 1907 * * *.

From 1906 to 1910 inclusive, there is only a difference of .83 of a person to the meter. It is clear to me that in the future the annual gain will largely depend upon the increase in population and the erection of new residences for their accommodation, and consequently the extension of mains to accommodate them" (transcript, page 90).

(h) That the company in 1910 did not in fact earn, and in the future would not earn a fair return upon the value of its property used for the public, the deficits as computed by the master being as follows:

The results for the three (3) years, based on the average operating costs of the five (5) years terminating December 31, 1910, after certain deductions had been made from them by the master, were:

	Deficit.
1910, *At the old $1.00 rate* (transcript, page 99, line 4),	$27,272.80

Note that at the proposed 90 cent rate, this deficit would have been $79,421.43.

1911, At the 90 cent rate (transcript, page 99, last line),	$73,031.84
1912 (transcript, page 100, last line),	72,799.00
1913 (transcript, page 102, line 6),	77,192.56
1914 (transcript, page 103, line 5),	84,238.00

1910 and the first ten (10) months of 1911 were based upon actual sales. For the years 1912, 1913 and 1914, the master was compelled to make estimates. In making these estimates, he took into account increases in sales and investment, and used the various operating expenses determined by him.

These computations are based upon $2,400,000 as the value of the property for the years 1910 (transcript, page 99, line 1) and 1911 (transcript, page 99, next to last line) and for the succeeding years upon the same amount, plus new construction less depreciation.

> (See for 1912, transcript, page 100, lines 12 *et seq.;* for 1913, transcript, page 101, heading "New Valuations"; for 1914, transcript, page 102, lines 11 *et seq.*)

This $2,400,000 includes the item of going value (transcript, page 105, heading "Conclusions," line 9) and is arrived at by deducting from the master's valuation of $2,540,000 the paving item of $140,000 already mentioned (transcript, page 61).

After the master had formulated these conclusions, this court decided

> *Cedar Rapids Gas Company vs. Cedar Rapids,* 223 U. S. 655.

The master concluded that this case (transcript, page 109, line 10)

> "* * * holds that 'Going Value' should not be considered in determining the basis upon which the Complainant is entitled to have its return reckoned, * * *"

saying that this would reduce the estimated deficit for each year $24,000 (8% upon $300,000, the amount of this item), which in his judgment brought the case "close to the border line" inducing him to recommend that the bill be dismissed without prejudice.

The opinion of the court below shows that the court was mistaken as to some important matters of fact, namely:

(1) In his statement that the master found the value of the property to be $2,240,928 (transcript, page 165, fourteenth line from bottom);

(2) In his statement that this $2,240,928 included $300,000, the going value item (transcript, page 165); and

(3) In his statement that "he (the master) reports that a 90 cent rate is sufficiently high for a sufficient return to the gas company" (transcript, top of page 163).

The conclusion of the court was based on false premises as to matters of fact and law; the conclusion of the master on false premises as to law. We shall therefore in this division of our brief take the facts found by the master and approved by the court, and attempt to show from them that the ultimate conclusion of the court below that the bill should be "dismissed with prejudice" (transcript, page 167, line 22) is erroneous.

II.

Some of the fundamental propositions stated but not discussed.

(a) At the time in question the city of Des Moines had the power to establish reasonable rates to be charged by appellant for gas sold and distributed in the city.

Code of Iowa, 1897, Supplement, Sections 724, 725.

(b) Rates so established must be sufficient to afford to the appellant a fair return upon the value of its property.

The Minnesota Rate Cases, 230 U. S. 352, 434;
Smyth vs. Ames, 171 U. S. 361;
San Diego Land and Town Company vs. National City, 174 U. S. 739;
San Diego Land and Town Company vs. Jasper, 189 U. S. 439;
Stanislaus County vs. San Joaquin, etc., Company, 192 U. S. 201;
Knoxville vs. Knoxville Water Company, 212 U. S. 1;
Willcox vs. Consolidated Gas Company, 212 U. S. 19.

(c) A fair return, broadly speaking, is a return which is relatively

equal to what money devoted to other like investments will earn.

See many of the cases just cited.

(d) The value to be ascertained is the fair value of the property used in performing the public service.

See many of the cases above cited.

(e) The appellant was bound to establish each ultimate fact necessary to sustain a decree in its favor by clear and satisfactory evidence.

See many of the cases above cited.

We submit, however, that the master, in holding the appellant bound to establish these facts beyond "a reasonable doubt" (transcript, paragraph 10, page 98; *Id.*, next to last paragraph, page 107), went beyond the established rule. Although it may be difficult to define it, there is a well recognized difference between what the rule applicable to criminal cases requires, and the clear and satisfactory proof necessary in suits in equity to reform contracts, to set aside transactions because of fraud, and to annul rates as confiscatory.

With these fundamental matters out of the way, we pass to the controverted questions.

III.

The item of paving.

The master used the cost of reproduction less depreciation as the means for ascertaining the value of the buildings, their contents, yard structures and the mains, house and street lamp services and meters (transcript, page 49). He determined that the cost of reproducing the mains included $305,870 as the actual cost of removing and replacing pavements, after deducting depreciation (transcript, page 61). Of this amount, he found that $140,000, though an inevitable part of the cost of reproduction, should be deducted, because portions of the streets were unpaved when the mains were laid, so that this expense was not incurred as a part of the original cost of the plant. The court below sustained the master in this conclusion (transcript, top of page 165).

This presents the first question to which we wish to call the court's attention.

(a) The character of this item is clear.

It is an expense incident to excavation and back filling. To dig the trench, the paving must be removed, just as the soil under it, and to fill the trench, it must be replaced, as the soil is. It is true the appellant does not own the paving; but neither does it own the soil below it.

(b) The cost represented by this item is inevitably a part of the cost of reproduction.

This is true because the mains can not be reproduced without removing and replacing the pavements any more than this can be done without removing and replacing the earth under the pavements.

(c) This factor must be taken into account in arriving at present value.

What is to be determined is present value. The first and fundamental question is—does the present value of a main in a street, so far as the question of paving is concerned, depend upon present conditions, or is it controlled by conditions which do not exist to-day but which may have existed at any time up to forty or fifty years ago?

If cost were the factor to be determined, it would be necessary to resort to the conditions when the mains were laid, but because it has been authoritatively held that what is to be determined is *present* value, present and not past conditions control.

A few out of an indefinite number of available illustrations will demonstrate the soundness of this conclusion.

A owns a gas main in a street which to-day is paved. B places by its side a main which is identical with it in every respect, including the factors affecting depreciation.

The value of B's main is not less than its cost, assuming the work to be done reasonably and economically, and this cost inevitably includes the cost of removing and replacing the pavements.

A's main, identical with B's in every particular, is worth exactly what B's is; and this is true because the two mains are identical in every particu-

lar; and reference to their cost cannot affect this conclusion.

To vary the facts a little, suppose that the street was paved when A's main was laid, but that this pavement was removed so that there was no pavement when B's main was laid. A's main, which in this case has cost more than B's, is identical with B's in every respect and is still worth exactly what B's is, and no more.

If the court below is right, the fact that two mains, or two other pieces of property are identical in every particular does not compel or even warrant the conclusion that they are of equal value. Before a conclusion could be reached upon this question, it would be necessary to inquire further as to original conditions and original costs.

What determines a thing's value is what it is, in its existing condition and relations, and not what it may have cost under different conditions.

The reasoning of the master and the court below upon this item would require them to compare costs as to every other item going to the cost of the mains. The cost of removing and replacing paving is nothing more nor less than a part of the cost of excavating and back filling. The reasoning that requires this factor in the cost of reproducing mains to be controlled by original cost would apply to every other item in the cost of reproduction. Cast iron pipe costs much less than it did thirty or forty years ago; labor costs much more; engineering and other factors vary; and all of these things would have to be reduced to original cost if the theory of the court below is correct. Nothing would be left of the present cost of reproduction; it would be reduced to an estimate of original cost.

Let us take another illustration. Suppose that we have in the system two consecutive blocks of mains, and that one block was put in the ground before the street was paved, and the other after the street was paved, but that at the date of the valuation the conditions with respect to each of these two blocks of mains are exactly the same, and either that there is then no pavement over either of them, or that there is identical pavement over both. If we are dealing with value as distinguished from cost, can it be said that the value of each block is not now identical?

It is because cost is not controlling that depreciation as well as appreciation must be taken into account in ascertaining present value. The item under consideration illustrates the gross inequity involved in illogical combinations of the two factors. The master arrived at his total reproduction cost by the combination of low items (transcript, page 53, last paragraph). The distribution system which includes the mains, was covered by the item $1,505,966 (table, transcript, page 54). Exhibit L (transcript, page 128) shows that this item included for mains $1,023.010. The master's factor representing the present depreciated value was 85.3% (transcript, page 59) of the value new, making the depreciation 14.7%.

Upon the value theory, therefore, this item of $1,023,010 is depreciated 14.7 per cent., or $150,382.47. Reverting to the cost theory, another $140,000 is cut off, making a total reduction of $290,382.47, or roughly 29 per cent. on this item.

The same considerations which compel the deduction of the depreciation, compel the allowance of this item of $140,000.

This exact question was, we submit, decided in

Willcox vs. Consolidated Gas Company, 212 U. S. 19.

Turning to the record in this case, we find that this question was first raised before the master (see his report, page 177, printed transcript in that case, filed here) where it is said:

> "The fact that reproduction cost is so greatly in excess of the cost of original construction *is due largely to changes in the character of the City's pavements.* Formerly, when the gas companies had occasion to open the streets for the purpose of laying new mains or repairing old mains or services, it was their custom to replace the pavement at a cost of from 15 to 25 cents per square yard. Now about 88 per cent. of the streets are covered with new styles of pavement, chiefly asphalt. The gas companies are permitted to open the streets only on condition that the pavements shall be relaid by the contractors for asphalt paving. The expense of this work is paid by the gas companies and amounts to from $2.70 to $7.00 per yard, the latter price being for pavement on Broadway. Pavements consisting of granite blocks on concrete, are replaced by the City's employees, and for this work the Complainant is charged $8.00 for the first square yard and $4.00 for each additional yard. Another source of additional cost is the congested condition of the sub-surface of the streets, in view of the multiplication in recent years of various forms of underground construction. In addition to sewer and water mains there are now conduits for electric light,

telephone and telegraph wires, underground trolley ducts, and salt water mains, besides, in certain streets, the elevated railroad columns, and structures of the rapid transit railway. The result is that in many streets the entire sub-surface is so filled with these structures that the replacement or repairing of existing mains is attended with great difficulty and consequent expense.

Taking the testimony on this subject as a whole, the preponderance of evidence is very clearly with the Complainant, and its estimate of the replacement value of the mains may be taken as reasonable."

Following this matter, we find the question elaborately discussed in the opinion of the circuit court, in

Consolidated Gas Company vs. New York, 157 Fed. 849.

At page 854 under the heading, "Method of Valuation," the court says:

"As to the realty, the values assigned are those of the time of inquiry; not cost when the land was acquired for the purposes of manufacture, and not the cost to the complainant of so much as it acquired when organized in 1884, as a consolidation of several other gas manufacturing corporations.

"It is objected that such method of appraisement seeks to confer upon complainant the legal right of earning a fair return upon land values which represent no original investment by it, does not indicate land especially appropriate for the manufacture of gas, and increases apparent assets without increasing earning power. *Analogous questions arise as to plant, mains, services and meters; the reported values whereof are the reproductive cost*

less depreciation, and not original cost to the complainant or its predecessors.

"It appears by undisputed evidence that some of these last items of property cost more than new articles of the same kind would have cost at the time of inquiry; that some are of designs not now favored by the scientific and manufacturing world, so that no one now entering upon a similar business would consider it wise to erect such machines or obtain such apparatus. *In every instance, however, the value assigned in the report is what it would cost presently to reproduce each item of property, in its present condition, and capable of giving service neither better nor worse than it now does.* As to all of the items enumerated, therefore, from real estate to meters, inclusive, the complainant demands *a fair return upon the reproductive value thereof, which is the same thing as the present value properly considered.* To vary the statement: Complainant's arrangements for manufacturing and distributing gas are reported to be worth the amounts above tabulated if disposed of (in commercial parlance) 'as they are.'

"Upon authority, I consider this method of valuation correct. What the court should ascertain is the 'fair value of the property being used.' *Smyth vs. Ames*, 169 U. S. at page 546, 18 Sup. Ct. at page 434. (42 L. Ed. 819); the 'present' as compared with 'original' cost; what complainant 'employs for the public convenience,' 169 U. S. at page 547, 18 Sup. Ct. at page 434 (42 L. Ed. 819); and it is also the 'value of the property at the time it is being used.' *San Diego Land Co. vs. Natl. City*, 174 U. S. at page 757, 19 Sup. Ct. at page 811 (43 L. Ed. 1154). And see also, *Stanislaus Co. vs. San Joaquin Co.*, 192 U. S. 201, 24 Sup. Ct. 241, 48 L. Ed. 406. It is impossible to observe this continued use of the present tense in these decisions of the highest court without feeling

that the actual or reproductive value at the time of inquiry is the first and most important figure to be ascertained, and these views are amplified by *San Diego Land Co. vs. Jaspar*, (C. C.) 110 Fed. at page 714, and *Cotting vs. Kansas City Stock Yards*, (C. C.) 82 Fed. at page 854, where the subject is more fully discussed. Upon reason, it seems clear that *in solving this equation the plus and minus quantities should be equally considered, and appreciation and depreciation treated alike.* Nor can I conceive of a case to which this procedure is more appropriate than the one at bar. The complainant by itself and some of its constituent companies has been continuously engaged in the gas business since 1823. A part of the land in question has been employed in that business for more than two generations, during which time the value of land upon Manhattan Island has increased even more rapidly than its population. *So likewise the construction expense not only of buildings, but of pipe systems under streets now consisting of continuous sheets of asphalt over granite, has enormously advanced.*

"The value of the investment of any manufacturer in plant, factory, or goods, or all three, *is what his possessions would sell for upon a fair transfer from a willing vendor to a willing buyer, and it can make no difference that such value is affected by the efforts of himself or others,* by whim or fashion, or (what is really the same thing) by the advance of land values in the opinion of the buying public. *It is equally immaterial that such value is affected by difficulties of reproduction. If it be true that a pipe line under the New York of 1907 is worth more than was a pipe under the city of 1827, then the owner thereof owns that value, and that such advance arose wholly or partly from difficulties of duplication created by the city itself is a matter of no mo-*

ment. Indeed, the causes of either appreciation or depreciation are alike unimportant, if the fact of value be conceded or proved; but that ultimate inquiry is oftentimes so difficult that original cost and reasons for changes in value become legitimate subjects of investigation, as checks upon expert estimates or bookkeeping inaccurate and perhaps intentionally misleading. *Cf. Ames vs. Union Pac. R. R.* (C. C.) 64 Fed. at pages 178, 179. If fifty years ago, by the payment of certain money, one acquired a factory and the land appurtenant thereto, and continues to-day his original business therein, *his investment is the factory and the land, not the money originally paid;* and unless his business shows a return equivalent *to what land and building, or land alone, would give if devoted to other purposes (having due regard to cost of change), that man is engaged in a losing venture, and is not receiving a fair return from his investment, i. e.,* the land and building. The so-called 'money value' of real or personal property is but a conveniently short method of expressing present potential usefulness, and 'investment' becomes meaningless if construed to mean what the thing invested in cost generations ago. Property, whether real or personal, is only valuable when useful. Its usefulness commonly depends on the business purposes to which it is or may be applied. Such business is a living thing, and may flourish or wither, appreciate or depreciate; but, whatever happens, its present usefulness, expressed in financial terms, must be its value.

"As applied to a private merchant or manufacturer, the foregoing would seem elementary; but some difference is alleged to exist where the manufacturer transacts his business only by governmental license—whether called a franchise or by another name. Such license, however, cannot change an economic law, un-

> less a different rule be prescribed by the terms of the license, which is sometimes done. No such unusual condition exists here, and, in the absence thereof, *it is not to be inferred that any American government intended, when granting a franchise, not only to regulate the business transacted thereunder, and reasonably to limit the profits thereof, but to prevent the valuation of purely private property in the ordinary economic manner, and the property now under consideration is as much the private property of this complainant as are the belongings of any private citizen. Nor can it be inferred that such government intended to deny the application of economic laws to valuation of increments earned or unearned, while insisting upon the usual results thereof in the case of equally unearned, and possibly unmerited, depreciation.*
>
> "I think the method of valuation applied by the report to land, plant, mains, services, and meters lawful."

There are several expressions in this opinion so striking that they are worth special comment. The court is right in saying that

> "in solving this equation the plus and minus quantities should be equally considered, and appreciation and depreciation treated alike."

In the case at bar, the court below considered the minus quantity but ignored the plus quantity.

Note again the statement:

> "It is equally immaterial that such value is affected by difficulties of reproduction. If it be true that a pipe line under the New York of 1907 is worth more than was a pipe under the city of 1827, *then the owner thereof owns that value,* and that such advance arose

wholly or partly from difficulties of duplication created by the city itself is a matter of no moment."

And this further statement, which is absolutely sound and very significant:

"Indeed, the causes of either appreciation or depreciation are alike unimportant if the fact of value be conceded or proved."

Returning now to the history of the *Consolidated Gas case*, we find that upon the appeal taken to this court from Judge Hough's decision, the 19th, 20th, 21st, 22nd and 23rd assignments of error (printed transcript, *Consolidated Gas case*, Vol. 1, pages 452-454) presented this question. We quote parts of them:

"*Nineteenth:* In sustaining the report of said Master in Chancery finding that the complainant is entitled to *a return on the present value of the plant, based on the cost of reproduction*, and not on the original cost less depreciation; whereas he should have found that where such present value based on the original cost less depreciation, is less than the present value based on the reproduction cost, that the complainant is entitled to a return as against the consumer only on the smaller amount. * * *"

"*Twentieth:* In sustaining the report of said Master in Chancery finding *the value of the mains of the complainant* on which it is entitled to a return as against the consumer, *to be the replacement value based on the cost of reproduction of the same; whereas said Master should have found said value of the mains to be the actual cost of investment therein by the complainant, less the depreciation*, as the only fair basis between the complainant and the

consumer, * * *. That in no sense can the mains of the complainant, many of which have been in the ground for fifty years, be said to be at the present time of a greater value than the actual cost, *merely because modern conditions would not permit duplication of such identical mains at the same cost at the present time;* * * *"

"*Twenty-first*: In sustaining the report of said Master in Chancery refusing to find that the appraisal value of both mains and services at the time of consolidation in 1884, was far in excess of their cost; and that the value of mains and services devoted by complainant to the public use was as of December 31, 1905, $6,359,324.46, which represents the original cost of mains and services transferred by the constituent companies to the complainant plus the expenditures of the complainant since 1884 on account of new construction thereof; whereas he should have found that such figures represented the then value of such mains and services on the basis of cost less depreciation, as carried on the books of the constituent companies, and that any figure in excess of such amount which the complainant claimed therefor at that time was in excess of the real value of such mains and services and such excess should not be included in the investment on which a return is to be allowed, *for the reason that it does not represent a cash outlay by the complainant,* and any capital stock issued for such excess by complainant was unwisely and wastefully issued; and in overruling the Twentieth Exception of this defendant to the report of said Master in Chancery."

"*Twenty-second*: In sustaining the report of said Master in Chancery finding that the complainant is entitled to *a return from the consumer on an amount for services based on the*

cost of reproduction at present prices; whereas he should have found that if the basis of present value is to be taken, no amount at all could be charged by the complainant, as such services are no longer owned by such complainant, inasmuch as so much thereof as are in the public streets are considered as separate from the franchises, and the balance thereof are on private property and belong to the owners of said property, and that it is only when the basis of actual cost, less depreciation, is adopted that any amount for services can be included by the complainant in the amount on which a return is to be provided by the consumer; and in overruling this defendant's Twenty-second Exception to said report of said Master in Chancery."

"*Twenty-third*: In sustaining the report of said Master in Chancery fixing the value of the services on which the complainant is entitled to a return at $1,994,000, that such amount is based on the cost of reproduction and is excessive in that *it capitalizes pavements* and allows no depreciation, that complainant has claimed such services depreciate to the extent of 25 per cent., that the proper present valuation is the cost less depreciation, and such value does not exceed $1,222,228.37, as shown on the books on December 31, 1905; and in overruling in this respect this defendant's Twenty-third Exception to said report of said Master in Chancery."

Note in passing that the argument of these assignments of error is the argument of the master and the court below in the present case.

These assignments of error were argued in this court. See pages 33-59 and page 84 of the brief of the attorney general.

This matter having been argued consistently at each stage of the case from the hearing before the

master to the final hearing in this court, this court said in its opinion at page 48 in this case:

> "That court found the value of the tangible assets actually employed at the time of the commencement of this suit in the business of supplying gas by the complainant *to be $47,831,435, to which it added the $12,000,000 as the value of the franchises* as found by it, making the total of $59,831,435, upon which it held that the company was entitled to a return of 6 per cent, being $3,589,886.10. It also found its total net income for the year 1905 amounted to $5,881,192.45, almost 10 per cent upon the sum above named. Altering the finding of the court *so far only as to place the value of the franchises at the time agreed upon in 1884, $7,781,000*, the total value upon that basis of the property employed by the company would be $55,612,435."

The only modification which this court made in the valuation was with reference to the franchises, but this is not all; this court expressly approved the method of valuation adopted by the circuit court in that case, saying at page 52:

> "And we concur with the court below in holding that the value of the property is to be determined as of the time when the inquiry is made regarding the rates. If the property, which legally enters into the consideration of the question of rates, has increased in value since it was acquired, the company is entitled to the benefit of such increase."

The valuation which this court adopted in the *Consolidated Gas* case was $55,612,435, and the estimated return was $3,024,592.14, which this court says "is nearly 5½% on the above total of $55,612,435." To be exact, it is 5.439%.

The appreciation in mains and services due to enhanced cost of reproduction in that case was $5,555,771.63, and this was included in the valuation, $55,612,435, approved by this court. If it were deducted, there would remain as the value of the property $50,056,663.37. The net return of $3,024,592.14 is 6.042% of this amount. Therefore, not only was this item allowed in the valuation, approved by this court in the *Consolidated case* after the question had been squarely presented here, but it is essential to everything in the opinion based on the conclusion that the return shown was slightly less than 6%.

In

Omaha vs. Omaha Water Company, 218 U. S. 180,

the cost of removing and replacing pavement, based on conditions at the date of the valuation and without reference to whether the streets were paved when the mains were laid, was included in the valuation, though the opinion does not discuss the question.

In

Steenerson vs. Great Northern Railway Company, 69 Minn. 353,

the supreme court of Minnesota in a railroad rate case, after discussing the matter generally, says:

> "Then the material question is not what the railroad cost originally, but what it would now cost to reproduce it."

It says further:

> "Let us now proceed to apply these general principles to this case. The four great ques-

> tions involved are: (1) What would it cost to reproduce the railroad? (2) What is a reasonable income on such cost? (3) What amount of income will the maximum rates fixed by the commission produce? (4) Is such amount so much below what is a reasonable amount that the court can say, as a question of law, that the rates so fixed are confiscatory?"

State vs. Minneapolis and St. Louis Railroad Company, 80 Minn. 191,

reaffirmed the doctrine of the *Steenerson case,* holding that proof of cost alone did not make a *prima facie* case of value. We quote the following:

> "One other suggestion in respect to defendant's failure of proof in rebuttal of the order. The rule laid down in the *Steenerson case* for ascertaining and determining whether the rates fixed are reasonable, and not confiscatory, was wholly ignored. Defendant's counsel did show what the road had cost up to June 1, 1899. This included every item of expenditure from the start. Cost of construction, repairs, equipment, additions and all other items were included. But not a particle of proof was presented as to present value or cost of reproduction."

In

Cotting vs. Kansas City Stock Yards, 82 Fed. 850, 854,

the court said:

> "On the other hand, however, when property is valued for the purpose last stated, it is clear that the owner thereof is entitled to the benefit of any appreciation in value above the original cost and the cost of improvement, which is due to what may be termed natural causes.

If *improvements made in the vicinity of the property, the growth of the city or town where it is located*, the building of railroads, the development of the surrounding country, and other like causes, give property an increased value, the owner cannot be deprived of such increase by legislative action which prevents him from realizing an income commensurate with the enhanced value of his property."

A recent case in New York, exactly in point, is

People ex rel. Kings County Lighting Co. vs. Willcox et al., 156 App. Div. (N. Y.) 603, 141 N. Y. S. 677.

We quote all that the opinion contains on this question (page 608 *et seq.*):

"II. *The present value of the city paving over mains and services.* While as to other items of physical property the Commission professed to appraise at its full value, and to apply the rule of cost of reproduction new, less accrued depreciation, it refused to include in the value of mains under paved streets more than the original cost of repaving when mains were laid. When the mains were laid, the streets were unpaved, sandy tracts in an unbuilt-up community. Mr. Connette, the engineer for the Commission, placed the cost for restoring pavement as it existed when the mains and services were laid, at $12,717. That amount was allowed by the Commission in its valuation. Mr. Baehr estimated the cost of reproducing the existing paving over mains and services as they existed January 1, 1911, at $264,666. Mr. Connette's figures upon that basis were $212,808. The relator claims that the valuation should have included this amount to the extent of at least $200,000.

In *Consolidated Gas Co. v. City of New York*, 157 Fed. 849, the difference between book value or original cost and the replacement cost or cost of reproduction of mains and services was about $5,560,000. Judge HOUGH said:

> 'The complainant demands a fair return upon the reproductive value thereof, which is the same thing as the present value properly considered. * * * Upon authority I consider this method of valuation correct. What the court should ascertain is the 'fair value of the property being used;' (*Smyth v. Ames*, 169 U. S., at page 546 * * *); the 'present' as compared with 'original' cost; what complainant 'employs for the public convenience' (169 U. S., at page 547 * * *); and it is also the 'value of the property at the time it is being used' (*San Diego Land Co. v. National City*, 174 U. S., at page 757 * * *). And see also *Stanislaus County v. San Joaquin Co.*, 192 U. S. 201 * * *. It is impossible to observe this continued use of the present tense in these decisions of the highest court without feeling that the actual or reproductive value at the time of inquiry is the first and most important figure to be ascertained. * * * The complainant, by itself and some of its constituent companies, has been continuously engaged in the gas business since 1823. A part of the land in question has been employed in that business for more than two generations, during which time the value of land upon Manhattan Island has increased even more rapidly than its population. So likewise the construction expense, not only of buildings, but of pipe systems under streets, now consisting of continuous sheets of asphalt over granite, has enormously advanced. The value of the investment of any manufacturer in plant, factory or goods,

or all three, is what his possessions would sell for upon a fair transfer from a willing vendor to a willing buyer; and it can make no difference that such value is affected by the efforts of himself or others; by whim or fashion; or (what is really the same thing) by the advance of land values in the opinion of the buying public. It is equally immaterial that such value is affected by difficulties of reproduction. If it be true that a pipe line under the New York of 1907, is worth more than was a pipe line under the city of 1827, then the owner thereof owns that value; and that such advance arose wholly or partly from difficulties of duplication created by the city itself is a matter of no moment. Indeed, the causes of either appreciation or depreciation are alike unimportant, if the fact of value be conceded or proved.'

The Supreme Court said (*Willcox vs. Consolidated Gas Co.*, 212 U. S. 19):

'And we concur with the court below in holding that the value of the property is to be determined as of the time when the inquiry is made regarding the rates. If the property which legally enters into the consideration of the question of rates, has increased in value since it was acquired, the company is entitled to the benefit of such increase. This is, at any rate, the general rule.'

It seems to me that we ought to regard that question as settled. The fact that these streets have been paved and the region generally improved has caused sales of land, the building of houses, and the increase in population, which has enabled the company within the last few years to make profits and declare dividends which for many years it was unable to do. The argument that streets paved or un-

paved make no difference in the earning power of a gas company is unsound. The earning power of a gas plant depends upon its constituency. If it has nobody to sell gas to it can make no profits; and if there are no decent streets there will be few people. The value of a plant of any kind is certainly affected by its location and the demand for its products. If a new company undertook to install a duplicate plant the cost of repaving under the present streets would properly be allowed for. Hence it is a necessary element of reproduction value. It is a valuable advantage which the present owner has which a prospective buyer would have to pay for. Like increased land values, a school of thought might condemn it as 'unearned increment,' but the law does not yet refuse to include it in its definition of property capable of ownership and entitled to protection."

The claim that the case of

Cedar Rapids Gas Light Company vs. City of Cedar Rapids, 144 Iowa 426,

sustains the court below upon this proposition, is based upon a misapprehension. We quote all that case says upon this subject:

"The sum of $43,580 was added owing to the alleged increase of value of pipes and mains because of being underneath the pavement. The company had laid them before the paving was done, but it is argued that, as the value of the mains and pipes are to be estimated when in the ground, what it would now cost because of the pavement to put them there should be included in determining present value. If so, the contingency of having to remove them at the expiration of the franchise also should be taken into account. Moreover, the fact that

most of the paved streets are paralleled by unpaved alleys or parkings in which pipes might be laid without removing the pavement, and possibly with less danger from electrolysis, is entitled to consideration. Nor is it to be forgotten that pavements yield to the ravages of time, and that with new pavements new pipe may be laid. *Undoubtedly the values of the pipes are somewhat enhanced because of their location, but the entire immediate cost of opening and replacing the pavement is not the criterion for value which should be adopted.* The contention illustrates how inequitable would be a rule arbitrarily fixing the value as that for which a system might be replaced. Aside from this being impractical it may safely be said that there is hardly an enterprise of this character, which, were it destroyed, would be restored as it was before. In ascertaining values in this way, the worth of a new plant of equal capacity, efficiency and durability, with proper discounts for defects in the old and depreciation for use, should be the measure of value rather than the cost of exact duplication."

The substance of what the court says is that if the cost of removing and replacing pavement is to be included, the contingency of being compelled to remove the mains should also be taken into account, as well as the fact that the mains might have been laid elsewhere and that pavements depreciate.

The suggestion that mains might be laid elsewhere has never been practically adopted by any engineer in actual work. Whether pavements depreciate is immaterial. They are always replaced by new pavements and the life of the main, which is practically unlimited, is unaffected. Mains are not laid elsewhere; and a fair deduction from this is that common experience has demonstrated that

where consumers on both sides of the street are to be reached, a place near the center of the street is on the whole best. The contingency of being compelled to remove the mains, if such a contingency exists, would apply to every item going to the cost of reproduction with equal force and has no special significance as to this item.

The master's discussion of this question commences at page 61 of the transcript. The statement that the company does not own the pavements requires no consideration. It does not own the soil under the pavement which it is required to remove and replace in laying a main, but the cost of removing and replacing both the soil and the pavement is, as he concedes, an inevitable part of the cost of reproduction.

The fundamental idea of the master apparently was that because the appellant had not paid for the paving over the mains, it would be inequitable to take into account this element of value. It did not seem inequitable to the master to deduct the depreciation for which the appellant had paid. He took into account minus but not plus quantities.

The discussion of this question by the court below indicates that it failed to apprehend the precise question presented. (See transcript, bottom of page 164 and top of page 165.) The court says:

> "If the plant is to be reproduced, when is it to be done? If when reproduced, will the streets then be paved, and if paved, paved with what? Must it all be reproduced at once, or the same covered by a number of years? If but gradually reproduced, why should not such cost go into either the operating or maintenance accounts? No one can state when it must be reproduced, and a material question arises; what then, as compared with the pres-

> ent, will be the price of labor, material and freight? But finally and to my mind the conclusive reason against the soundness of the reproduction under paved streets is, that to allow that theory to prevail, and to increase the capitalization now to the extent of $140,000.00, is to allow such gas rates as will pay a dividend on such sum from and after this date. But the sum of $140,000.00 is not put in the capital or value account until the plant is reproduced."

The first three questions indicate an entire misconception of what is ordinarily meant by the cost of reproduction. The plant is to be reproduced as of the date of the valuation; whether the streets will then be paved and with what is shown by the then existing conditions, and it is reproduced as rapidly as is economically possible. This is the method adopted by every witness in the case who testified as to the cost of reproduction, and by every witness in every other case who has testified on that subject, we think.

The cost should not go into the operating or maintenance accounts because the expense of building a plant is a capital expense. There is no question as to the price of labor, material and freight as between the time of reproduction and the present, because the date of the reproduction is the date of the valuation, and these factors must be fixed as of that date, and this was done by every witness who testified in the case.

Finally, the court says that the conclusive reason against the allowance of this item is that it allows a return upon something that is not now in the plant and will not go into it until the plant is reproduced. This item is now in the plant, just as

much as any other item going to the cost of the mains. The court seems to have thought that it was intended to actually reproduce this plant, and does not seem to have grasped the idea that the cost of reproduction is an estimated cost necessary because present value is determined by present conditions, and is intended to be used as a criterion in forming a conclusion as to that value.

The cost of reproduction as a factor in determining present value has a well defined meaning. It is an estimate of the cost which would be incurred if the property were reproduced as of the date at which the valuation is made. The property is not actually reproduced, and it is not contemplated that it ever will be actually reproduced. It is because present conditions determine present value that the cost of reproduction, which is predicated upon these conditions, is of so much weight in determining value. It is the involuntary test which one applies in order to determine the reasonableness of a price put upon most things which are offered for sale. The prospective purchaser consciously or unconsciously says to himself, what would it cost me to obtain this same thing from some other source, or what would it cost me to reproduce it—and the answer to this question determines his conclusion as to the reasonableness or unreasonableness of the price asked.

IV.

The court erred in its conclusion that the total of $2,240,928 was stated by the master as the value of the plant, and in the conclusion that this included the item of $300,000 on account of going value.

The court's discussion of this matter is found at the bottom of page 165 of the transcript.

The master's report unfortunately in no one place assembles all of the items which he took into account in reaching his valuation, and it is therefore necessary to go through the report in order to demonstrate the court's error as to this matter.

In working out his reproduction cost items, the master followed what had been the practice of most of the engineers; that is, he took what are called their base figures, which are the cost of labor, and material, and added to them certain other costs such as interest during construction, engineering and other so-called overhead charges, and then took up the paving and going value separately. We propose to follow him through the outline of this valuation.

He first arrived at his base figure, $1,975,026 (transcript, page 54). He defines this base value (transcript, page 53) as follows:

> "'The Base Value' of any of the buildings, machinery, apparatus, or other property, is what it would cost to produce it at the present time new, without adding thereto, any overhead charges."

The master took the combination of the lowest base figures to arrive at his item of $1,975,026 (transcript, page 54).

He then took up the question of overhead charges (*Id.*, page 54) and concluded that 15% should be added on this account (transcript, page 57, second paragraph). He then takes up (transcript, page 57) depreciation, saying:

> "'The Base Value' with the 'Overhead Charges' added, give us the present value of the physical plant new, and in order to get the present value of the physical plant, it becomes necessary to determine to what extent this amount should be depreciated."

He concludes that the present per cent condition should be 85.3%, making depreciation 14.7%. See transcript, page 59, where he says:

> "In estimating the life of the buildings and depreciation, both Lea and Baehr have shown great care in their estimates, and the latter makes the rate 88.2 per cent on the entire physical plant, excluding real estate, while Lea makes it 85.3 per cent. In my estimate thereof, the rate found by Lea has been adopted."

Adding 15% overhead to his base figure of $1,975,026, gives him $2,271,280, to be used in ascertaining his depreciation (transcript, page 59):

> "Total cost new, with the overhead charges is $2,271,280
> Present value 85.3 per cent..... 1,937,402
>
> Depreciation ..... $333,878"

He has to add to this real estate, working capital, organization expenses and meters in stock, which he does, giving him a total of $2,240,928, which was the amount taken by the court (tran-

script, page 60). He then takes up this paving item which we have discussed. He says:

> "My conclusion is that this amount of $140,000 should be deducted from the total amount hereinbefore given" (transcript, page 62).

It will be noted that the master says (transcript, page 60, last line):

> "Total physical value..... $2,240,928"

After disposing of his paving item, he takes up going value, and says (transcript, page 63):

> "But I am not inclined to accept without discounting, any of these estimates, but fix the 'Going Value' at $300,000. It may be asked on what basis this amount is determined. The evidence followed strictly might require me to make it higher, could my mind rest satisfied that the 'Going Value' of this concern is worth more, but I cannot feel satisfied that such is the case, and regard $300,000 as every dollar it is worth *over and above its physical value,* and in my judgment, it is worth that much more than a plant would be that had to develop its business."

Note that this item which he is discussing on page 63 is something which he says is over and above the physical value, which before deducting the paving he found was $2,240,928, the amount which the court below says includes this item of $300,000.

Going further, we find (transcript, page 105) that the master says:

> "There is so much doubt in one item, in the Base Values, that is included in the item No. 18 for $21,057, that the same is reduced to

$20,657, and the *value of the physical property is made in round numbers $2,100,000,* and *Going Value at $300,000, making $2,400,000,* January 1, 1911, upon which the Rate of Return is reckoned. *The deduction of $140,000* on account of taking up and replacing mains [pavements] where none existed when the mains were laid is fully stated under that head."

The figures to which we have referred, tabulated, are as follows:

Total base figures (transcript, page 54)	$1,975,026	
Add 15% for overhead (transcript, page 57).	$296,254	
		$2,271,280
Depreciation (transcript, page 59)		333,878
Balance		$1,937,402
Working capital (transcript page 60)		140,000
Real estate (*Id.*)		150,000
Organization expenses (*Id.*)..		6,923
Meters (*Id.*)		6,603
Total (transcript, page 60, last line)		$2,240,928
Going value (transcript, page 63)		300,000
		$2,540,928
Deduct correction item (transcript, page 105).....		928
		$2,540,000

Deduct paving (transcript, pages 61, 105).....	140,000
	$2,400,000
Deduct going value, on account of Cedar Rapids Gas Light Company decision (transcript, page 109).....	300,000
	$2,100,000

We think that it is absolutely clear that the master's final valuation, after the deduction of both paving and going value, was $2,100,000; that his valuation, including these items, was $2,540,000; and that his final conclusion was *not* that $2,240,928 represented either what he called the total physical value or this total physical value plus the going value.

This is confirmed by further examination of the master's report (transcript, page 91); the master discusses the amount of the additional investment which would be required for the year 1911, and says:

> "It depends upon the growth of the city very largely. Eighty thousand M. C. F. of gain indicates an increase of capital to the amount of $176,800. This, in my judgment, is less than the evidence of the engineers, testimony will justify according to the references heretofore given. It makes the physical value at that time $2,276,800 and including going value $2,576,800, in which the Complainant is entitled to a reasonable return, after deducting depreciation."

If the additional investment of $176,800 be deducted so as to give his values January 1, 1911,

these amounts would be $2,100,000 and $2,400,000, which, taking into account the paving item of $140,000, check exactly with that we have heretofore said.

Returning to page 98 of the transcript, we find the master's computations as to future net revenue. For the year 1911, which is the year of the valuation, he takes (transcript, first line at page 99) $2,400,000 as the amount upon which he computes 8% to ascertain his fair return. Note the next paragraph, where he says that this computation is based upon the assumption that the property was worth as much January 1st, 1910, as at the close of the year, the date of the valuation when the new rates were to be effective, and makes a deduction for the additions during the year.

Passing on, the master computes, beginning at page 100 of the transcript, the additional investment for the year 1911 less depreciation, and adds the balance to $2,400,000 to obtain the value of the plant for 1912, $2,414,368.80. This balance goes forward into his new valuations for 1913, and 1914, so that it appears that in all of these computations made prior to the decision of the *Cedar Rapids case,* the master treated as his value $2,400,000 and arrived at it as follows:

Total value physical property.....	$2,240,928
Deduct adjustment	928
	$2,240,000
Deduct paving item	140,000
	$2,100,000
Add going value	300,000
	$2,400,000

After the *Cedar Rapids case* was decided, the master said, referring to the deficits and to his conclusion that the going value item should be excluded (transcript, page 109):

> "This would result in reducing the estimated deficit for each year $24,000, and yield a return to the complainant of, at least, 6 per cent. on $2,100,000."

These deficits were based upon a valuation of $2,400,000. When the master deducted going value it became $2,100,000. Upon neither contingency could it be $2,240,928.

The court below held that the appellant was entitled to this item and then through a misunderstanding of the master's report, took it away from it.

V.

The item of going value.

Perhaps a substantially correct definition of this element in the value of this property would be the difference between the value of the plant as it was with its established business at the time in question, and what would have been the value of the same physical property tested out and in a condition to operate, but without business, or developed earnings.

The master, in his statement that the plant

> "is worth that much more than a plant would be that had to develop its business" (transcript, page 63),

and in his statement on the same page,

> "I think a purchaser would be willing to add this amount for its developed business, and that a seller would not be willing to sell unless he got that much more than its physical value,"

and in his further statement at the bottom of the page,

> "The element of 'Good Will' as applied to the ordinary merchant or manufacturer dealing with the public generally is not considered in estimating the 'Going Value' of complainant's plant,"

has shown clearly that he ascribed to this term the established meaning, and that our definition is substantially correct. This is the sense in which the term was used throughout the evidence.

Bearing in mind that it can not be contended that a plant with a developed business is not worth more than the same physical property without the business, and that this element of value has been referred to by this court as "an element contributing to the value of each tangible part" (*Omaha Water Case*, 218 U. S. 180), it would seem to be equally clear that this element of value may not be confiscated; but the master decided that this court had held to the contrary in

> *Gas Company vs. Cedar Rapids*, 223 U. S. 655,

and we therefore discuss this question.

(a) The Cedar Rapids case.

If we comprehend it correctly, what the *Cedar Rapids* case decides is:

1. That because constitutional questions not frivolous appear upon the record the motion to dismiss the appeal should be overruled;

2. That there was no contract on the part of the city that the price should be kept high enough to allow a discount for prompt payment;

3. That the facts were not open to re-examination except as such re-examination might be incidental to the questions of law raised by the assignments of error;

4. That it was not such a clear case as to warrant the reversal of a decree which, though final in form, merely postponed a decision upon the merits.

As supporting the conclusion that the case did not require its interference, this court says:

> "To refer in the first instance to the point just mentioned, we cannot say as matter of law that at ninety cents a thousand feet the company will be unable to collect payment without losses that will amount to a taking of its property. **Then again, although it is argued that the court excluded going value, the court expressly took into account the fact that the plant was in successful operation. What it excluded was the good will or advantage incident to the possession of a monop-**

oly, so far as that might be supposed to give the plaintiff the power to charge more than a reasonable price."

This, as we understand it, instead of holding that the court below excluded going value and approving that holding, holds that the court below did not exclude it and in support of that statement calls attention to the fact that that court expressly took into account the fact that the plant was in successful operation.

The supreme court of Iowa recognized going value as an element in the value of the plant, but held that good will could not be included and held therefore that evidence as to an item of $100,000 which included both without indicating how much should be ascribed to good will and how much to going value, was not competent. That court says (144 Iowa 434):

> "Also the sum of $100,000 was included by these witnesses as enhancement of value by reason of being a 'going concern.' As previously intimated, the value of the plant is to be estimated in its entirety, rather than by the addition of estimates on its component parts, though the latter course will materially aid in determining the value. Advantages have accrued through the sagacity of its management as contended by appellant. So, too, there are the inevitable mistakes which would not be likely in the construction of a new plant; but to put a new plant in profitable operation time would be required, and **aside from the intangible element of good will, the fact that the plant is in successful operation constitutes an element of value.**

As said, the value of the system as completed, earning a present income, is the criterion. Insofar as influenced by income, however, the computation necessarily must be made on the basis of reasonable charges, for whatever is exacted for a public service in excess of this is to be regarded as unlawful.

Save as above indicated, the element of value designated a 'going concern' is but another name for 'good will' which is not to be taken into account in a case like this, where the company is granted a monopoly. *Cedar Rapids Water Company vs. City of Cedar Rapids,* 118 Iowa 234; *Willcox vs. Consolidated Gas Co.,* 29 Supt. Ct. 192. **The witnesses for plaintiff took into account 'good will' in giving their opinion of the enhancement in value because of being a going concern, and we have no means of separating these so as to ascertain their estimate of the separate advantage of completion so as to earn a present income."**

Any doubt as to the proper construction of the *Cedar Rapids Case* is resolved by an analysis of the figures contained in the opinion of the state court. If we take the figures that are there set out, and, making such deductions as the court makes, compare the total of the items of the physical property with the total valuation, it is inevitable that the court allowed both going value and paving over mains.

We insert a computation, with reference to the pages of the opinion which is reported in 144 Iowa, where the various items may be found:

"Plaintiff's chief expert estimated the physical properties to be worth" (p. 438, last line)		$365,564.41
This included $43,580 "Increase of value of pipes and mains because of being underneath the pavement" (line 25, p. 437).		
Deduct the following items included in the foregoing total of $365,564.41 and definitely disallowed by the state court:		
(1) Working capital included at $25,000 and allowed at $2,500 (p. 433, line 23) .	$22,500.00	
(2) The so-called annex, real estate intended for future use, unnecessary for present use (p. 435, line 22, and p. 436, line 9)	16,500.00	
(3) Deductions made by the court from the valuation placed by the complainant upon its real estate $15,000 or $20,000 (p. 436, line 20) say	17,500.00	
(4) Purifiers (p. 436, line 27)	1,600.00	
(5) Deductions on account of excessive price of cast iron mains (p. 436, last paragraph) say	5,000.00	
(6) Marion high pressure line ¾ of $5,483 (p. 437, line 23)	4,112.00	
(7) Promotion and organization (p. 438, lines 21 and 31-2)	14,943.69	
		$82,155.69
		$283,408.72

This amount, $283,408.72, is the maximum valuation of the physical property because only those deductions have been made that are specifically warranted by the opinion.

In the foregoing no deductions are made for either of the following items included in the $365,564.41 although the references to these items in the opinion unmistakably indicate that they were not allowed to their full amount:

Brought forward		$283,408.72
(8) Interest during construction (p. 438, lines 20 and 24)	$22,415.00	
(9) Engineering (p. 438, lines 21 and 28)	18,679.61	
(10) Increased value of mains because of being underneath paving (p. 437, line 25)	43,580.00	
		84,674.61
		$198,734.11

The court found (p. 439, line 33) that a fair valuation of the entire plant is somewhere between $300,000 and $350,000. A deduction from this value of some amount between $283,408.72 and $198,734.11 will leave what the court allowed for going value. The following conclusions are inevitable:

1st. If interest during construction, engineering and increased value of mains because underneath paving were allowed in full, then the value of the physical property, aside from going value, is $283,408.72, and there is allowed as going value some amount between $16,591.28 and $66,591.28.

2nd. The adoption of this theory would compel the abandonment of the contention that this case is an authority for disallowing paving over mains, and at the same time compel the concession that the valuation fixed included something on account of going value.

3rd. To contend that the entire item of paving over mains was disallowed in this case, involves increasing the allowance for going value by the amount of this item, $43,580, which would make it somewhere between $60,171.28 and $110,171.28, an amount relatively so large as to render this hypothesis extremely improbable.

4th. If the items, interest during construction, engineering and increased value of mains because underneath paving, be substantially reduced, which in view of what is said about them in the opinion is clearly what was done, then the amount of such reduction must be added to what otherwise was allowed for going value.

This case, which was affirmed by this court, allowed both of the items which are in dispute here.

This mathematical demonstration removes all doubt as to the construction of the language in this opinion of the Iowa court that has been already referred to. The court says (p. 434):

> "The fact that the plant is in successful operation constitutes an element of value."

Again it is said:

> "The value of the system as completed, earning a present income, is the criterion."

And again when it stated its conclusion at page 439 the court uses the significant language which we italicize:

> "A careful review of the entire record which has been repeated, has led to the conclusion that *a fair valuation of the entire plant* is somewhere between $300,000 and $350,000."

This language, when read in connection with the computation made from the court's opinion makes it impossible to infer that it was the purpose of the supreme court of Iowa to exclude either going value or appreciation due to paving over mains.

The master says as to real estate (transcript, bottom of page 48):

> "In my judgment, should the Complainant sell their property, and undertake to change their location, they could not get as good a place for less than $150,000 and it is very doubtful if they could get it for that."

He says as to going value (transcript, page 63):

> "I think a purchaser would be willing to add this amount for its developed business, and that a seller would not be willing to sell unless he got that much more than its physical value."

In fixing going value he has applied the same test to this element that he has applied to the other elements. It is a real element in the value of the property and cannot be excluded without abandoning value as the basis for reasonable rates. The master's conclusion is that the basis of rates should be as low as only seven-eighths of what the property would sell for. What would be the basis for the purchasers' rates?

(b) The authorities all recognize going value as an element in the value of such a property.

The leading case is

National Water Works Company v. Kansas City, 62 Fed. 853,

in which Mr. Justice Brewer wrote the opinion. It was a case involving the acquisition of a water plant under an ordinance which required the city to pay for it "the fair and equitable value of the whole works." The franchise had expired. The court said:

> "Nor would the mere cost of reproducing the water works plant be a fair test, because that does not take into account the value which flows from the established connections between the pipes and the buildings of the city. It is obvious that the mere cost of purchasing the land, constructing the buildings, putting in the machinery, and laying the pipes in the streets—in other words, the cost of reproduction—does not give the value of the property as it is to-day. A completed system of water works, such as the company has, without a single connection between the pipes in the streets and the buildings of the city, would be a property of much less value than that system connected, as it is, with so many buildings, and earning in consequence thereof, the money which it does earn. The fact that it is a system in operation, not only with a capacity to supply the city, but actually supplying many buildings in the city—not only with a capacity to earn, but actually earning—makes it true that 'the fair and equitable value' is something in excess of the cost of reproduction. *The fact that the company does not own the connections between the pipes in the streets and the*

buildings—such connections being the property of the individual property owners—does not militate against the proposition last stated, for who would care to buy, or at least give a large price for a water works system without a single connection between the pipes in the streets and buildings adjacent? Such a system would be a dead structure, rather than a living and going business. The additional value created by the fact of many connections with buildings, with actual supply and actual earnings, *is not represented by the mere cost of making such connections.* Such connections are not compulsory, but depend upon the will of the property owners, and are secured only by efforts on the part of the owners of the water works, and inducements held out therefor. The city, by this purchase, steps into possession of a water works plant—not merely a completed system for bringing water to the city, and distributing it through pipes placed in the streets, but a system already earning a large income by virtue of having secured connections between the pipes in the streets and a multitude of private buildings. It steps into possession of a property which not only has the ability to earn, but is in fact earning. It should pay therefor not merely the *value of a system which might be made to earn,* but that of a system which does earn. Our effort has been to deduce from the volume of testimony that which, in this view of the situation, can be safely adjudged 'the fair and equitable value.' "

Every dollar that the master in the instant case and the court below (through its misapprehension of the facts) have allowed was the mere cost of reproduction less depreciation. Referring to this opinion, in

Omaha vs. Omaha Water Company, 218 U. S. 180,

Mr. Justice LURTON said:

> "We can add nothing to the reasoning of the learned justice, and shall not try to."

In this same case, this court said further, at page 202:

> "The option to purchase excluded any value on account of unexpired franchise, but it did not limit the value to the bare bones of the plant, its physical properties, such as its lands, its machinery, its water pipes or settling reservoirs, nor to what it would take to reproduce each of its physical features. The value in equity and justice must include whatever is contributed by the fact of the connection of the items making a complete and operating plant. The difference between a dead plant and a live one is a real value, and is independent of any franchise to go on, or any mere good will as between such a plant and its customers. That kind of good will, as suggested in *Willcox vs. Consolidated Gas Co.*, 212 U. S. 19, is of little or no commercial value when the business is, as here, a natural monopoly, with which the customer must deal, whether he will or no. That there is a difference between even the cost of duplication, less depreciation, of the elements making up the water company plant, and the commercial value of the business as a going concern is evident."

Note the last sentence. It is this difference between the cost of duplication less depreciation and the commercial value of the business as a going concern which the appellant claims it is entitled to have considered in this case.

Note this further extract from the *Omaha case:*

> "The appraisers in making their estimate of valuation included $562,712.45 for the 'going

value.' This separation of *an element contributing to the value of each tangible part* was done because required to be done under an order made in the circuit court in a suit in which the water board of the city of Omaha was complainant and the members of the board of appraisers and the water company were defendants."

If this element contributes to the value of each tangible part of the plant, and it clearly does, to hold that it should not be considered is to hold that the company must submit to a return upon something less than the value of the property used for the public.

We digress for a moment to note a statement in the master's report (transcript, page 83), that the assessor would be justified in increasing an assessment of this property at $1,300,000 by over $1,000,000 if he assessed the property at its correct value. This brings the total to $2,400,000, which included going value, so that this element in the value of the physical property may be taken into account for purposes of taxation, and sale, but may be confiscated for rate purposes if the master is not in error.

A recent and very well considered case is

> *Public Service Gas Company vs. Board of Public Utility Commissioners, et al.* (not yet officially reported), 87 Atl. 651.

On the point of going value, the court said:

> "For going value or cost of developing the business $1,025,000 was allowed. The cities claim that no allowance at all should be made and their writ was prosecuted to

secure the correction of this alleged error. For reasons already stated we cannot, in these proceedings, lower the rate fixed by the commissioners, and it would be useless, therefore, to reject this item of the valuation as counsel for the cities ask. The company insists that there should be allowed about twice as much including preliminary expenses and cost of development.

It is necessary, therefore, to determine first whether any allowance at all for going value is proper. We think both on weight of authority and on reason there should be such an allowance."

In support of this position, the court cites the cases referred to by us of

National Water Works Co. vs. Kansas City, supra;

Kennebec Water District vs. City of Waterville, infra;

Gloucester Water Company vs. City of Gloucester, infra;

Town of Bristol vs. Bristol & Warren Water Works, infra;

Norwich Gas & Electric Company vs. City of Norwich, infra;

Omaha vs. Omaha Water Company, supra.

The court then continues:

"The cost of a gas plant includes not merely the loss of interest while the plant is in course of construction and is building up a paying business, but even in the case of an old-established plant, for the manufacture and distribution of a commodity to the use of which the public has become so accustomed that it seems a necessity, there must be loss while pipe lines are extended to await the coming of consumers as the city extends. There

is the cost of securing and retaining customers, of encouraging the greater use of gas for fuel and for light by the introduction of new and improved appliances, the necessary loss attending experiments that promise improvement, the obsolescence of plant apart from that ordinary calculable depreciation which may be charged to current expenses instead of being capitalized, the expense that must attend, and the additional value that arises from the uniting of separate concerns, and the organization of a great industry with a view to economical production, and the cost of procuring capital for the original works or subsequent extensions.

What items should be charged to construction, what to business development, how much to current expenses, and how much to permanent investment of capital, are all most important practical business questions. However these questions may be solved, all the expenses must be met. Whether they shall be met at the expense of present consumers by being charged at once to current expenses, thus reducing the net return and making necessary a higher rate, or whether they shall be capitalized in whole or in part and constitute a permanent addition to capital, or be capitalized and gradually amortized, are business questions. The legal question is whether these items constitute a going value upon which the company is entitled to a return if the individual rate is to be just and reasonable. To this we answer, yes.

The argument addressed to us on the other side is that all the so-called going value appears in the valuation of the physical plant at the cost of reproduction; the suggestion is that unless there was going value the physical plant would be mere junk, and that the difference between the valuation of the physical

plant at its cost of reproduction and its valuation as junk is the true going value. The argument seems to us specious rather than sound. We think that if by value we mean what the economists call exchange value, then a buyer would undoubtedly give more for a plant already doing a profitable business than for a plant of equal cost, capacity, and future possibilities, but without the established business. To a purchaser the assurance of an immediate return is worth paying for, and we see no reason to doubt the correctness of the ruling of the United States Supreme Court in *Omaha vs. Omaha Water Co.*, 218 U. S. 180. We agree with the view expressed for that court by Mr. Justice Lurton, 'that the difference between a dead plant and a live one is a real value, and is independent of any franchise to go on, or any mere good will as between such a plant and its customers.' It is true that that was a condemnation case and not a rate case, and involved, therefore, a question of exchange value, and not the question of a fair and reasonable valuation as between a public service company and the public. The two bases of valuation may properly be different, since upon a sale or condemnation the probability of an assured income and a continuance of the existing rates enters into and affects the exchange value; while in the case of a valuation for the purpose of fixing a rate, the question is what valuation and rate will tempt the investment of capital, and to what extent existing rates may with justice be lowered. In this view the fallacy of the argument on behalf of the cities is that it requires the investor to suffer all the loss if the enterprise fails, and deprives him of the chance of additional gain if the enterprise succeeds; and it fails to allow any recompense for the skill shown in developing and conducting the business or even for the value of experience, which is proverbially expensive.

Even in a business as well established and as necessary as the gas business, there is competition with other methods of obtaining light, heat, and power, and there are few of us who have not ourselves had experience of the extension in the use of gas due to the efforts of the company to introduce new appliances. Moreover, we think counsel for the company are right in their contention that the value of an assembled and united plant may be greater than the total value of the separate parts. The examples given of the increased value of the New York Central Railroad over the value of its constituent parts (*Cleveland Ry. Co. vs. Backus*, 154 U. S. 439, 444), of the increased value of an express company's property in a single state due to its connection with property of the same company in other states (*Adams Express Co. vs. Ohio*, 165 U. S. 194; 166 U. S. 185; and the recent case in this court of *West Shore Railroad Company vs. State Board of Assessors*, 82 N. J. Law 37) suffice to illustrate the difference between the value of a whole plant and the sum of the value of its parts."

The commissioners' going value, which was affirmed by the court in the case just cited, amounted to thirty per cent. of the value of the other property, as against a little less than fifteen per cent. allowed in the instant case.

In

People ex rel. Kings County Lighting Company vs. Willcox et al., 156 App. Div. (N. Y.) 603; 141 N. Y. Supp. 677,

which we have already quoted, it was held again in a rate case that this item of value must be taken into account. In that case the court said:

"I am unable to perceive a logical difference between allowing 'going value' in the valuation

of a plant when it is to be taken entirely by the public and allowing the same element when valuing the same plant for rate making purposes. In each case the thing to be done is the fair appraisement of present value. What difference in principle can there be because in one instance all is taken for the use of the public and in the other the public limits the earnings?"

Monongahela Water Company's Case, 223 Pa. St. 323,

was a condemnation case. Here a report of the appraisers which stated that the appraisers had taken into account this element of value was approved by the court.

Appleton Water Works Co. vs. Railroad Commission of Wisconsin, 142 N. W. 476 (not yet officially reported),

contains an interesting discussion of this question. As to going value in general, the court says:

"The term 'going value' is somewhat vague, and is a comparatively recent addition to the terminology of the subject. It is not the value of the franchise, and it is not the good will of the business; certainly it cannot be the latter in the case of a monopoly like the present. It has been variously spoken of as the 'difference between a dead plant and a live one' (*Omaha vs. Omaha Water Co.*, 218 U. S. 180), or 'the element of value which comes from the fact that the property is sold as a going concern' (*Gloucester W. S. Co. vs. Gloucester*, 179 Mass. 365, 60 N. E. 977); 'the added value because of the company's being a going concern' (Commissioner Roemer in his testimony in the present case).

> The existence of the term as designating a substantial element of value seems to be largely due to the fact that in appraisal cases like the present, as well as in rate-making cases, there has been a very general adoption, both by courts and commissioners, of the plan of ascertaining by expert evidence the cost of reproduction of the existing plant, and then making a deduction for depreciation, and thus arriving at what is called the present physical valuation. This has been universally recognized, not as fixing the present physical value of the property or the business, but only as an important and helpful consideration which may throw much light on the question. It has the advantage of comparative ease and certainty of ascertainment. It is said by Whitten (Valuation Pub. Serv. Corps. §639) to be at present the most generally accepted basis of valuation for purchase or rate making. Construing the word 'basis' to mean simply a fundamental fact or starting point not in any sense exclusive or controlling, the statement seems to be substantially correct. Important as it may be, however, this physical valuation so obtained is but one of numerous facts to be considered in reaching the final result."

Proceeding, the court states the rule as to value for the purposes of making rates, saying:

> "The commercial value of the business in full operation and entitled to charge reasonable rates for its service must, however, be considered as approximating the compensation which should be allowed for the property; in other words, the sum which the business should be capitalized for in order that the owner should receive a reasonable return on the investment, when the business is conducted with reasonable business skill, and charges such reasonable rates for service as the law permits."

In

Omaha vs. Omaha Water Company, supra.

this court cited with approval,

Gloucester Water Company vs. City of Gloucester, 179 Mass. 365;

Norwich Gas Company vs. City of Norwich, 76 Conn. 565.

The *City of Gloucester case* was a proceeding for the determination of the value of the property upon a purchase by the city under a statute of Massachusetts. In this case the act required the city to pay the fair value of the property and said "such value shall be estimated without enhancement on account of future earning capacity or future good will on account of the franchise of said company." Under this act it was held that going value should be taken into account. The court says:

> "It is plain that the real, commercial, market value of the property of the water company is, or may be, in fact, greater than 'the cost of reproduction, less depreciation, of the different features of the physical plant.' Take, for example, a manufacturing plant: suppose a manufacturing plant has been established for some ten years and is doing a good business and is sold as a going concern; it will sell for more on the market than a similar plant reproduced physically would sell for immediately on its completion, before it had acquired any business. *National Water Works of New York vs. Kansas City*, 10 C. C. A. 653; 62 Fed. 853; 27 U. S. App. 165. We think it is plain that there is nothing in the provisions of section 16 of the act in question (St. 1895, c. 451) forbidding the commissioners considering this element of value, which, as we have

seen, in fact exists. * * * It is plain that the element of value, which comes from the fact that the property is sold as a going concern, in which case it has, or may have, in fact, a greater market value than the same property reproduced in its physical features, is not excluded from consideration by that provision of the statute.

It is also plain that the commissioners, in allowing the $75,000 allowed by them in addition to the cost of duplication, less depreciation, of the plant in its physical features, did not go beyond this."

The total valuation in that case was $576,544.60, including $75,000 for going value. This was about 15 per cent. of the remainder, the amount allowed for going value being relatively a little more than allowed by the master here.

In

Norwich Gas & Elec. Co. vs. City of Norwich, supra,

the court says:

"It was also proper for the commission to pay regard to the fact that the plaintiff has an established business, built up after experiments and changes during a long period. *Gloucester Water Supply Co. vs. Gloucester*, 179 Mass. 365; 60 N. E. 977. This tended to strengthen the presumption that the actual earnings at the time of the city vote could be relied on as an important factor in determining the earning capacity of the plant. A manufacturer seeking to sell his works and anxious to enhance their apparent value when estimated at a particular day, might, by extraordinary efforts, get special orders to be filled on that day, which would give his operations a temporary and fictitious magnitude.

> It is only in case of an established business, based upon the use of well-tested and long-tested apparatus, perfected by many trials, experiments and changes, that the net earnings of a day are a fair index of the net earnings of a year. The commission reports that it considered, in connection with these facts, that the plaintiff's business had been thus 'built up at the risk of private capital.' It indisputably had been so built up, and whatever had been sunk in experiments in order to secure and with the result of securing a good working plant was properly considered as entering to some extent into the value of that plant."

A very recent case heard by Morrow, circuit judge, and Van Fleet and Sawtelle, district judges, on an application for a preliminary injunction is

> *Bonbright et al. vs. Geary et al.*, 210 Fed. 44.

Their holding that the exclusion of one or more of the necessary elements of value is to that extent a taking of private property for a public use without just compensation is so pertinent that we quote what they say upon this subject:

> "The inquiry will also be aided by another rule, that if the valuation of any one of the necessary elements of the public service plant is fixed by the rate-making authorities at an amount unjustly and unreasonably low in a substantial amount, or if the value of an element of substantial value used and useful in maintaining or operating such a plant is entirely omitted by the rate-fixing authority, such unreasonable and unjust valuation or omission of valuation is the taking of private property for a public use without just compensation."

They hold that going value is one of the elements that must be considered in determining the value of the property. We quote the following upon this question:

> "As has been stated, this is the valuation of a going concern as distinguished from the bare bones of the corporation. The courts recognize a difference between the value of a plant of this character, without customers or business, and a plant that has been fully established and connected up with a municipal lighting system and with the houses, business places, and factories of regular customers. The present corporation was in August of last year a going concern; it was connected up with the municipal lighting system, the houses, business places, factories, and other institutions of a prosperous community, and there was nothing more to do except to deliver the service, for which the corporation was fully and efficiently equipped. We think this element of valuation should be considered in connection with the other elements of valuation with the view of determining the actual present value of the whole plant."
>
> *Spring Valley Water Works vs. City and County of San Francisco*, 124 Fed. 574,

was a rate case and there it was evidently sought to distinguish between rate cases and condemnation cases upon this proposition. In that case the court said at page 595:

> "The complainant next contends that it has an established business as a water company and as a going concern in supplying water to consumers, and that its plant has a value by reason of these advantages beyond the mere cost of reproducing the plant. In support of this view the complainant cites the case of

National Water Works Co. vs. Kansas City, 62 Fed. 853; 10 C. C. A. 653; 27 L. R. A. 827. The opinion is by Mr. Justice BREWER of the supreme court. On page 865 he says:

> 'A complete system of water works, such as the company has, without a single connection between the pipes in the streets and buildings of the city, would be a property of much less value than that system connected, as it is, with so many buildings, and earning, in consequence thereof, the money which it does earn. The fact that it is a system in operation, not only with a capacity to supply the city, but actually supplying many buildings in the city—not only with a capacity to earn, but actually earning—makes it true that "the fair and equitable value" is something in excess of the cost of reproduction.'

This was also a condemnation proceeding, but, as before stated, the principles of compensation applicable to such a case appear to be applicable to the present case.

In another San Francisco case,

> *Spring Valley Water Company vs. City and County of San Francisco, et al.*, 165 Fed. 667,

the question of rates was involved and the court squarely decided that the element of going value must be taken into account. In that case the court says that this item must be allowed. We quote merely the statement of the court's conclusion:

> "It also appears to be the law that whatever discoverable value may attach to the concern as a going business is proper to be considered in determining the value of complainant's plant for rate-fixing purposes. *National*

Waterworks Co. vs. Kansas City, 62 Fed. 853, 865, 10 C. C. A. 653, 27 L. R. A. 827; *Spring Valley W. W. vs. San Francisco* (C. C.) 124 Fed. 574, 595."

In

Kennebec Water District vs. City of Waterville, 97 Me. 185,

the supreme court of Maine had before it a proceeding for the acquisition of a water property. Under the statute the parties were allowed to apply to the court for instructions as to the legal propositions to be applied in making the valuations. The court instructed them to include going value, but to exclude good will. We quote the following:

"Defendant's request 8 is in effect that in estimating even the *structure value* of the plant, allowance should be made, in addition to the value as otherwise established, for the fact, if proved, that the water system is a going concern, with a profitable business and good will already established, and with a present income assured and now being earned. We think this instruction, with a modification to be noted should be given. *Newburyport Water Co. vs. Newburyport, supra; National Water Works Co. vs. Kansas City, supra; Gloucester Water Supply Co. vs. Gloucester, supra; Bristol vs. Water Works,* 23 R. I. 274; 49 Atl. 974. But the term 'good will' may be misleading. Lord Eldon said that good will is nothing more than the probability that the old customers will resort to the old place. *Crutwell vs. Lye,* 17 Ves. Jr. 335. See *Flagg Mfg. Co. vs. Holway,* 178 Mass. 83; 59 N. E. 667. Under any possible definition, it involves an element of personal choice. This phrase is inappropriate where there can be no choice. So far as the defendants' system is 'practically exclusive,' the ele-

ment of good will should not be considered. *Bristol vs. Water Works, supra.*

"The defendants in request 9 ask that in determining the amount to be added to structure value, in consideration of the fact that the system is a going concern, the appraiser should consider, among other things, the present efficiency of the system, and length of time necessary to construct the same *de novo*, the time and cost needed after construction to develop such new system to the level of the present one in respect to business and income, and the added net incomes and profits, if any, which, by its acquirement as such going concern, would accrue to a purchaser during the time required for such new construction, and for such development of business and income. We think this instruction should be given. These are all proper matters for consideration 'among other things.' They are not controlling. Their weight and value depend upon the varying circumstances of each particular case. Of course a plant, as such, already equipped for business, is worth more, if the business be a profitable one, than the mere cost of construction."

In

Galena Water Co. vs. City of Galena, 74 Kan. 644,

the supreme court of Kansas recognized a valuation of $75,400 by the referee, including $15,214.73 on account of going value. The district court refused to allow this. On this account its decree was reversed by the supreme court, which says:

"We think the district court erred in excluding from its estimate of the 'fair and equitable' value of the water works system the sum of $15,214.73, that being the amount found by

the referee to be the value of the plant as a going concern, including the franchise. A system of water works in a city, without the right to operate there, or without being connected with water takers, and not in a running condition, would be comparatively worthless. *The water company was the owner of these important elements of value, and it seems reasonable that they should not be taken without compensation.*"

This opinion quotes from the

Town of Bristol vs. Bristol and Warner Water Works, 23 R. I. 274,

"Everything which the defendant can sell to another he can sell to the town. *A fair and reasonable price to the town is what would be a fair and reasonable price to anyone else.*"

Newburyport Water Co. vs. City of Newburyport, 168 Mass. 541,

was decided by the supreme court of Massachusetts while Mr. Justice HOLMES was a member of that court, and the opinion is written by him. We make the following extract:

"The commissioners state the elements of valuation which they have taken into account. In addition to the value of the tangible property and easements, they have allowed $40,000 for the fact that the plant was a going concern and in full operation. They have allowed for everything for which the petitioner was entitled to be paid. They have approached the question in a manner in which it was within their discretion to approach it. *National Waterworks Co. vs. Kansas City*, 62 Fed. 853."

Venner vs. Urbana Water Co., 174 Fed. 348,

involved a question of rates in connection with which there was a valuation. The court says at page 352:

> "It is well established that fair compensation for such service includes operating expenses, taxes, cost of administration, and a fair yearly allowance for the maintenance of the plant and such return on the value of the capital and property employed as is just and reasonable. Upon consideration of the testimony of the experts, Hays, Williams, Mead and Hill, I am of the opinion that the fair reproduction value of the property is $155,000, to which should be added $25,000 as the 'going value' of the property, the definition of which is given by Justice BREWER as follows:
>
> > 'The fact that it is a system in operation, not only with capacity to supply the city, but actually supplying many buildings in the city, not only with a capacity to earn, but actually earning, makes it true that 'the fair and equitable value' is something in excess of the cost of reproduction. * * * It should pay, therefore, not merely the value of a system which might be made to earn, but that of a system which does earn.'

Note here the amount allowed is over 15 per cent of the value of the property exclusive of this item.

In

Spring Valley Waterworks vs. City and County of San Francisco, 192 Fed. 137,

the court says:

> "I shall consider the fact that complainant has an established business, not by fixing a definite value therefor, but along the lines suggested by the sound and practical utterances

of Judge SAVAGE in *Brunswick Water District vs. Main Water Co.*, 99 Me. 371, 376; 59 Atl. 537, 539:

> 'We speak sometimes of a going concern value as if it is or could be separate and distinct from structure value—so much for structure and so much for going concern. But this is not an accurate statement. The going concern part of it has no existence, except as a characteristic of the structure. If no structures, no going concern. If a structure in use, it is a structure whose value is affected by the fact that it is in use. There is only one value. It is the value of the structure as being used. That is all there is to it.'

The good will of complainant will not be considered as a proper element for valuation in this proceeding. Good will rests on the probability that customers as a matter of personal choice will continue to trade where they have been doing business. Here there is no such choice. They must take water from the Spring Valley Water Company or go without. *Willcox vs. Consolidated Gas Co.*, 212 U. S. 19, 21, 52; 29 Sup. Ct. 192, 53 L. Ed. 382; *Contra Costa Water Co. vs. City of Oakland (Cal.)*, 113 Pac. 668, 676."

This was a rate case, not a condemnation case.

A late rate case sustaining this contention is

> *People ex rel. Kings County Lighting Co. vs. Willcox, et al.*, 156 App. Div. (N. Y.) 603, 141 N. Y. S. 677.

We quote all of the opinion which bears on this subject:

> "1. *Going Value.* It claims that as an established business there should have been added

an item for 'going value' of $600,000, the smaller of the estimates given by its two expert witnesses. In condemnation cases this has been settled by the Supreme Court of the United States.

In *Omaha vs. Omaha Water Company*, 218 U. S. 180, 30 Sup. Ct. 615, 54 L. Ed. 991, the question was as to the amount to be paid by a municipality on taking over a system of waterworks. Nearly $600,000 had been allowed by the appraisers for going value. The Court said:

> 'The option to purchase excluded any value on account of unexpired franchise; but it did not limit the value to the bare bones of the plant, its physical properties, such as its lands, its machinery, its water pipes or settling reservoirs, nor to what it would take to reproduce each of its physical features. The value in equity and justice must include whatever is contributed by the fact of the connection of the items making a complete and operating plant. The difference between a dead plant and a live one is a real value, and is independent of any franchise to go on, or any mere good will as between such a plant and its customers. • • • That there is a difference between even the cost of duplication, less depreciation, of the elements making up the water company's plant, and the commercial value of the business as a going concern, is evident. Such an allowance was upheld in *National Waterworks vs. Kansas City*, 62 Fed. 853, 10 C. C. A. 653, 27 L. R. A. 827, where the opinion was by Mr. Justice Brewer. We can add nothing to the reasoning of the learned justice, and shall not try to. That case has been approved and followed in *Gloucester Water Supply Co. vs. Gloucester*, 179 Mass. 365 (60 N. E. 977), and *Norwich Gas Co. vs. City of Norwich*, 76 Conn.

565 (57 Atl. 746). No such question was considered in either *Knoxville vs. Knoxville Water Co.*, 212 U. S. 1 (29 Sup. Ct. 148, 53 L. Ed. 371), or in *Willcox vs. Consolidated Gas Co.*, 212 U. S. 19 (29 Sup. Ct. 192, 53 L. Ed. 382, 15 Ann. Cas. 1034). Both cases were rate cases, and did not concern the ascertainment of value under contracts of sale.'

It is true the question has not been directly decided in a rate case in the United States Supreme Court. In the Knoxville Case, *supra*, Mr. Justice MOODY said of the valuation:

'It was made up by adding to the appraisement, in minute detail of all the tangible property the sum of $10,000 for "organization, promotion, etc.," and $60,000 for "going concern." The latter sum we understand to be an expression of the added value of the plant as a whole over the sum of the values of its component parts, which is attached to it because it is in active and successful operation and earning a return. We express no opinion as to the propriety of including these two items in the valuation of the plant, for the purpose for which it is valued in this case, but leave that question to be considered when it necessarily arises. We assume, without deciding, that these items were properly added in this case.'

And the United States Supreme Court again left the question undecided in *Cedar Rapids Gas Co. vs. Cedar Rapids*, 223 U. S. 655, 669, 32 Sup. Ct. 389, 390 (56 L. Ed. 594), HOLMES, J., saying:

'Then again, although it is argued that the court excluded going value, the court expressly took into account the fact that the plant was in successful operation. What it

excluded was the good will or advantage incident to the possession of a monopoly, so far as that might be supposed to give the plaintiff the power to charge more than a reasonable price. * * * In this case the court fixed a value on the plant that considerably exceeded its cost and estimated that under the ordinance the return would be over 6 per cent.. Its attitude was fair, and we do not feel called upon to follow the plaintiff into a nice discussion of details.'

But 'going value' has been considered and allowed for in the following rate cases: *Missouri, Kansas & Texas Ry. Co. vs. Love* (*C. C.*), 177 Fed. 493, 496; *Shepard vs. Northern Pacific Ry. Co.* (*C. C.*), 184 Fed., 765, 810; *Des Moines Water Co. vs. City of Des Moines* (*C. C.*), 192 Fed. 193, 197; *Pioneer Tel. & Tel. Co. vs. Westenhaver*, 29 Okla. 429, 118 Pac. 354, 38 L. R. A. (N. S.) 1209.

"I am unable to perceive a logical difference between allowing 'going valuation' in the valuation of a plant when it is to be taken entirely by the public and allowing the same element when valuing the same plant for rate making purposes. In each case the thing to be done is the fair appraisement of present value. What difference in principle can there be because in one instance all is taken for the use of the public and in the other the public limits the earnings?

In the case at bar the Commission says it 'disallowed this claim in determining fair value, * * * but did consider it in fixing the rate of return.' If so, there is no proof of that fact in the record."

(c) The rule is the same in rate cases and condemnation cases.

The *Omaha Water case* contains the following statement:

> "No such question was considered in either *Knoxville vs. Knoxville Water Co.*, 212 U. S. 1, or in *Willcox vs. Consolidated Gas Co.*, 212 U. S. 19. Both cases were rate cases, and did not concern the ascertainment of value under contracts of sale."

It will be argued that this supports the contention that value is one thing when it is proposed to take property in violation of the fourteenth amendment and another thing when it is proposed to take the same property in violation of the fifth amendment. The language quoted does not warrant this contention, but because the contention may be made, we desire to briefly consider it.

The provision of the fourteenth amendment which is invoked in the present case is

> "Nor shall any state deprive any person of life, liberty or *property* without due process of law."

The provision in the fifth amendment, controlling in condemnation cases, is:

> "Nor shall private *property* be taken for public use without just compensation."

These provisions are incorporated in the constitutions of practically all of the states.

It is inconceivable that this word "property" should mean one thing in the one case and another thing in the other. It is the word that is used to describe what may not be taken. Unless this be

true, if a municipality desired to acquire one of these plants by condemnation, the first step would be by a rate schedule to destroy every element of value except what was represented by the mere bare bones of the plant. It could then condemn what was left upon its own terms.

In

Willcox vs. Consolidated Gas Company, supra,

this court in discussing the question whether franchises were protected by the fourteenth amendment, said:

> "It cannot be disputed that franchises of this nature are property, and cannot be taken or used by others without compensation."

The court cites in support of this proposition,

Monongahela Navigation Company vs. United States, 148 U. S. 312.

This was a condemnation case arising under the fifth amendment, and if the contention which we have referred to were sound, would have been entirely beside the point.

In the *Monongahela Navigation Company case*, the court says:

> "The value of property, generally speaking, is determined by its productiveness—the profits which its use brings to the owner."

It says further:

> "Demand for the use is another factor. The commerce on the Monongahela river, as appears from the testimony offered, is great; the demand for the use of this lock and dam con-

> stant. A precisely similar property, in a stream where commerce is light, would naturally be of less value, for the demand for the use would be less. The value, therefore, is not determined by the mere cost of construction, but more by what the completed structure brings in the way of earnings to its owner. For each separate use of one's property by others, the owner is entitled to a reasonable compensation; and the number and amount of such uses determine the productiveness and the earnings of the property, and, therefore, largely its value."

The court says further, showing a striking analogy with the case at bar:

> "In this case, it being property devoted to a public use, the amount of compensation was subject to the determination of the State of Pennsylvania, the state which authorized the creation of the property. The prices which may be exacted under this legislative grant of authority are the tolls, and these tolls, in the nature of the case, must enter into and largely determine the matter of value."

We have already seen that if this element of value is to be disregarded in a rate case, the municipality can confiscate it, then condemn the property for less than its value, and then enjoy this element of value. Note in this connection what Mr. Justice BREWER says at page 337:

> "And here it may be noticed that, after taking this property, the government will have the right to exact the same tolls the Navigation Company has been receiving. It would seem strange that if by asserting its right to take the property, the government could strip it largely of its value, destroying all that value which comes from the receipt of tolls, and,

> having taken the property at this reduced valuation, immediately possess and enjoy all the profits from the collection of the same tolls. In other words, by the contention this element of value exists before and after the taking, and disappears only during the very moment and process of taking. Surely, reasoning which leads to such a result must have some vice, at least the vice of injustice."

This case is referred to in

> *Fairbanks vs. United States,* 181 U. S. 283,

where, after stating the provision of the act of congress, the court says in stating what the *Monongahela Navigation Company case* decided:

> "The idea being that simply the value of the tangible property was all that need be paid for; and it was held that such proviso could not be sustained; that while the right of condemnation was clear, it was limited by the clause in the fifth amendment, 'nor shall private *property* be taken for public use without just compensation,' and that that language required payment of the *entire value of the property of which the owner was deprived.*"

Like the fifth amendment, the fourteenth amendment protects the entire property and therefore requires a return upon the entire value of the property.

We submit that this is the only possible conclusion upon this question. That upon which the appellant is entitled to earn a return is the present value of its property. This means that every material factor affecting that value must be taken into account. This is a rule which has been iterated and reiterated by this court. It is said in the

> *Minnesota Rate Cases,* 230 U. S. 434,

"The ascertainment of that value is not controlled by artificial rules. It is not a matter of formulas, but there must be a reasonable judgment having its basis in a proper consideration of all relevant facts. The scope of the inquiry was thus broadly described in *Smyth vs. Ames*, *supra* (pp. 546-547): 'In order to ascertain that value, the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stock, the present as compared with the original cost of construction, the probable earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses, are all matters for consideration, and are to be given such weight as may be just and right in each case. We do not say that there may not be other matters to be regarded in estimating the value of the property. What the company is entitled to ask is a fair return upon the value of that which it employs for the public convenience. On the other hand, what the public is entitled to demand is that no more be exacted from it for the use of a public highway than the services rendered by it are reasonably worth.'"

This is one of the elements that must be taken into account in arriving at a sound conclusion as to the value of this property. As the master said, any man purchasing the property would take it into account, and any man selling the property would take it into account. The court below held that we were entitled to it, and then through a misapprehension of the master's figures held that we had already received it. In this the court below erred.

VI.

What is a fair return?

A public authority may not by compulsion make a schedule of rates so low as to amount to confiscation. As a minimum, a public utility is entitled to a fair return. The distinction between a reasonable rate and a fair return is admirably stated in

> *Public Service Gas Company vs. Board of Public Utility Commissioners, et al.* 87 Atl. 651 (not yet officially reported),

where the court says:

> "The next question is whether the rate fixed was just and reasonable. On the one hand a just and reasonable rate can never exceed, perhaps can rarely equal, the value of the service to the consumer. On the other hand, it can never be made by compulsion of public authority so low as to amount to confiscation. A just and reasonable rate must certainly fall somewhere between these two extremes, so as to allow both sides to profit by the conduct of the business and the improvements of methods and increase of efficiency. Justice to the consumer, ordinarily, would require a rate somewhat less than the full value of the service to him; and justice to the company would, ordinarily, require a rate above the point at which it would become confiscatory. To induce the investment and continuance of capital there must be some hope of gain commensurate with that realizable in other business; the mere assurance that the investment will not be confiscated would not suffice."

What is a reasonable return, that is, what return will secure the investment necesary to carry on the

business, is a question of fact, varying under varying conditions at different times and in different localities. This court said, in

Willcox vs. Consolidated Gas Company, 212 U. S., 19, 48,

> "There is no particular rate of compensation which must in all cases and in all parts of the country be regarded as sufficient for capital invested in business enterprises. Such compensation must depend greatly upon circumstances and locality; among other things, the amount of risk in the business is a most important factor, as well as the locality where the business is conducted and the rate expected and usually realized there upon investments of a somewhat similar nature with regard to the risk attending them."

The supreme court of Iowa has definitely held that what is a fair return is a question of fact, to be determined by the testimony in each particular case. We make the following excerpt from its opinion in

Cedar Rapids Gas Light Company vs. Cedar Rapids, 144 Ia. 426, 448,

> "What compensation will be reasonable is a question of fact to be determined in the light of the evidence in each particular case. No court of last resort has undertaken to say what per cent. on the value such an investment should yield its owner in all cases."

In that case, obviously there was no evidence upon this question. The court says at page 450:

> "Possibly the plant should earn a return equal to the interest paid in the community on investments equally permanent in character, *but what this was is not disclosed by the record.*"

In the case at bar the testimony upon this question was full and complete, and the master found (transcript, page 73) that this evidence clearly justified 8%. We will refer to this testimony somewhat in detail in the other division of this brief.

The investment by the Des Moines Gas Company of $2,540,000 in the gas plant in Des Moines is a permanent investment. Not only must this investment remain, but common experience and the history of this particular plant as disclosed by the testimony, confirm the conclusion of the master that there must be continual additions to this investment.

It is fundamentally and radically wrong to assume that the return to which this investment is entitled and which it must in the long run receive, if the service is to continue, is something which may be determined by a consideration of abstract rules, or by the discretion or whim of any regulatory body, or even of any court.

The money which goes into public utilities comes from the general investing public. It will go, just as inevitably as water will run down hill, into those investments which, all things being considered, promise the highest return. The effect of the laws of demand and supply is certain.

Consequently, so long as these public utilities are not municipally owned, so long as these public services are furnished by privately owned plants, it will be necessary to pay, in order to secure the capital for these investments, returns which, taking into account the hazards and all of the other material circumstances, will place these investments on a parity with other investments seeking the general supply of capital. These factors determine what is

a fair return, and they will continue to determine it, so long as fundamental economic laws remain unchanged.

It is worth while to remember that the price of money can no more be fixed by legislation than can the price of coal or of any other commodity; that the price of money, that is, the fair return, must be determined through the consideration of the testimony of those who know, just like any other matter of fact, and cannot be determined by mere speculation.

VII.

Upon the facts found, the complainant was entitled to a decree upon the merits in its favor.

The master in his consideration of the testimony, construed the rule which requires the facts to be established by clear and satisfactory evidence to mean that each material fact should be established beyond a reasonable doubt. Our discussion of the evidence elsewhere demonstrates that his conclusions were without exception extremely conservative, and, we believe, less favorable to the complainant than a proper application of the clear and satisfactory rule would have produced. Without considering here the weight of this testimony, the proposition which we wish to urge is that upon the master's own findings, which the court approved, there was but one possible conclusion, namely, a decree for the complainant.

The testimony was more complete than that in any like case as to which we are informed. It em-

braced, among other things, in minute detail the cost of reproduction of the plant and the amount of depreciation; the cost of the plant and the additions made to it from year to year for a long series of years; the actual cost of manufacturing gas, showing this cost in minute detail for the five (5) years preceding December 31, 1910 (Complainant's Exhibit 24, transcript, opposite page 3466), and for the next ten (10) months up to the first of the month in which the case was submitted to the master (Complainant's Exhibit 93, transcript, opposite page 3478), and showing these costs generally for nearly twenty-five (25) years; the revenue derived from the sales of gas for th same periods (see same exhibits); for the period commencing June 30, 1886, and ending December 31, 1910, for each year, the population per meter and per mile of main, the sales per capita, per meter and per mile of main, the revenue per thousand cubic feet per meter, per capita and per mile of main, and the operating expenses without depreciation, showing the cost per thousand cubic feet, per meter, per capita and per mile of main (Complainant's Exhibit 36, transcript, opposite page 3468); exhaustive studies of the financial history of the plant as shown by its records and accounts, by W. J. Hagenah (transcript, page 3427) and by Mr. Hall, a chartered accountant and witness for the city (transcript, page 3611); the history of the plant and of its surroundings, and innumerable other facts and circumstances. The showing was many times more complete and exhaustive than what would be required by a banker who proposed to buy the plant's securities, or by a purchaser who proposed to buy the plant itself.

There is another most important consideration. It is suggested by the master's remark (transcript, page 108): "Judicial prophecy is a new role for me."

What we wish to emphasize is that this is not and was not a case calling for the exercise of prophetic gifts. What the master failed to realize is that the gas business is as was said by this court in the *Consolidated case*, a most stable business. One who is familiar with the business and with the circumstances of a particular case, may predict with substantial accuracy what the operations of that plant will be in the immediate future. This is done every day; and it is the certainty of such predictions that makes the stability of this industry. If this were not true, if the past did not furnish a sure guide as to the future, if the future were mere speculation, what would be the consequences?

If there were such instability in the business, the return which would attract capital to it would have to be very largely increased. A purely speculative business does not attract capital at the rate of 6% in New York or of 8% in Iowa.

Intelligent and economical engineering would be impossible. What makes it possible to build a gas plant of the proper capacity so as to secure economy in its construction and operation is the fact that it is possible to tell with substantial accuracy what the requirements of the plant will be, and its output for a reasonable time in the future.

The testimony showed that this plant was well designed, and had been economically and efficiently managed. Its experience of twenty-five (25) years, with careful studies of the community, established normal conditions as facts, so that it was entirely possible to tell with substantial certainty what

this property would do. A study of the curves later referred to will show that the master, from the testimony, did this in a way to command confidence in his conclusions as to future sales.

The very fact that capital will undertake investments of this character with a return not much greater than what can be secured from sound loans to be repaid at a fixed time, is conclusive evidence that common business experience has demonstrated the stability of this business.

The question then is not a matter of speculation, it is not something which requires the exercise of the gift of prophecy; its determination requires only sound skilled business judgment.

The master himself reached certain and definite conclusions. Upon every hypothesis which he considered he found that at the 90 cent rate the plant did not and would not earn a fair return. He had no doubt about the fact of a deficit; his only difficulty was that he could not measure the exact amount of this deficit.

We have then this situation. In the *Consolidated case,* at page 49, the court said, as to the investment:

> "In an investment in a gas company, such as complainant's, the risk is reduced almost to a minimum."

In the instant case, the plant had been in operation nearly fifty (50) years. What would be accomplished under normal conditions was established. The things which differentiate it from the New York plant, such as the power of the municipality to regulate the rates, some question as to the franchise situation, and the power of the municipality to authorize competing plants, are things

whose influence is not in the direction of a conclusion that a rate now confiscatory may become compensatory, but whose influence is strongly in the opposite direction.

Upon every hypothesis suggested by the master, and he looked at the question from many angles, the proposed rates would not yield a fair return. He said (transcript, page 108):

> "Should the Court hold that the $140,000 for taking up and replacing mains (paving) where none existed at the time the mains were laid, then a decree for the complainant would be imperative, should 'Going Value' be included in the basis for a return."

He did not recommend a decree for the complainant because he believed that the *Cedar Rapids case* required him to hold that the city had the power to confiscate the element of $300,000 in the value of this plant.

We propose now to call attention to the findings showing that at the $1.00 rate the plant did not earn a fair return in 1910; that it would not have earned a fair return in 1911, or 1912, or 1913, or 1914, at the 90 cent rate; that it would not do this at the average operating cost of the preceding five (5) years, after deducting every questionable item; that it would not do this at the operating costs of 1910 and 1911, after making like deductions; that it would not do this at the lowest operating cost of the preceding five (5) years; that the deficits were substantial, amounting to a large proportion of the entire return; that it could not reasonably be anticipated that a reduction of 10 cents in the rate would increase the sales so as to make the return compensatory because there was a remarkable development in Des Moines, one meter for

every four and one-half people—that is practically one meter for every family; because the plant had not the capacity to manufacture enough gas to earn this return; because there was not a sufficient population in Des Moines to buy and consume the gas if it had been possible to manufacture it and offer it for sale; and because the prior experience of the company when reductions in rates were made, negatived the contention that such a reduction could produce such increased sales.

These facts are not the speculation of witnesses. They are the deductions made by the master and confirmed by the court below from a detailed history of the operations of this property in this community for a quarter of a century.

This is clear and satisfactory evidence. If it is not, then there is no such thing as clear and satisfactory evidence upon such a question as this. It is evidence that shows that upon every hypothesis which is consistent with the facts as to the operation of this property, it will not in the immediate future at the 90 cent rate earn a fair return. Any assumption that the property may earn a fair return at this rate involves the assumption that the operating costs will be radically less than experience has shown that under efficient management they can be; or that the plant must produce over fifty per cent more gas than its capacity; that sales must be immediately increased even at a valuation of only $2,100,000 by over forty per cent., and this in the face of a development which shows one meter for every family; and notwithstanding the fact that the population is insufficient to consume such increased sales, and that such increased sales have never followed like reductions in the history of this property.

We will now call attention to the specific things in the master's report which sustain these general statements.

(a) The estimates as to future net revenue and deficits.

The master estimated the future net revenue in his report (transcript, page 98). *Note that these estimates are based upon such increases in sales as the history of the plant indicated as probable.* The curves which we insert later confirm the soundness of these estimates.

Valley Junction was a small suburb where the investment was only about $45,000, and would not affect the result. The master, for accuracy, however, takes it into account. As has been noted, the master's returns are computed upon $2,400,000 as the value, which excludes the item of paving, which means that his deficits are each $11,200 less than they would have been if this item of value had been included.

The computations made by him were based for the year 1910 on the $1.00 rate and thereafter on the proposed 90 cent rate. In all cases all doubtful items of operating cost were disallowed. For the year 1910 and for ten (10) months of the year 1911, the master used the actual sales. For the other years the master made assumptions as to sales based upon the evidence. He took the average operating costs for the five (5) years preceding December 31, 1910, as adjusted by him, the operating cost for the lowest year in this period, and for the years 1910 and 1911 the adjusted actual

operating cost for these years. The results obtained by him were as follows:

	Deficit.
1910, $100 rate (transcript, page 99, line 4)	$27,272.80
1911, 90 cent rate (transcript, page 99, last line)	73,031.84
1912, 90 cent rate, average operating cost for five (5) years (transcript, page 100, last line)	72,799.00
1912, 90 cent rate, operating cost for lowest of five (5) years (transcript, page 101, line 9)	60,329.50
1912, 90 cent rate, adjusted operating costs of 1910 (transcript, page 101, line 13)	75,119.50
1913, 90 cent rate, operating cost of 1911 (transcript, page 102, line 4)	72,050.00
1913, 90 cent rate average adjusted operating cost (transcript, page 102, line 6)	77,192.56
1913, 90 cent rate, adjusted 1910 operating cost (transcript, page 102, line 8)	79,612.56
1913, 90 cent rate, operating cost of lowest year (transcript, page 102, line 10)	64,185.06
1914, 90 cent rate, adjusted operating cost for 1911 (transcript, page 102, fourth line from bottom)	78,815.20
1914, 90 cent rate, adjusted operating cost for 1910 (transcript, page 102, last line)	86,790.20
1914, 90 cent rate, lowest operating cost for five (5) years (transcript, page 103, line 3)	70,521.20
1914, 90 cent rate, adjusted average operating cost for five (5) years (transcript, page 103, line 6)	84,238.00

It should be borne in mind that to each of these deficits there should be added $11,200, and that each of them is a large fraction of the total net revenue to which the master found the company entitled which was only about $200,000 a year. Not one of the cost factors was as large as the expense actually incurred by this company, whose management the master approves as sound (transcript, page 75). These deficits run over 40% of the fair return; that is, they mean confiscation of about one-half of the property.

In other words, the master determined that upon no hypothesis predicated upon any actual experience of the plant was it possible for the property to earn much more than one-half of a fair return.

Such facts would be good enough to convict a man under the Sherman act; they would be good enough to set aside a deed or a contract for fraud, and we think they compel a decree for the complainant.

This case is not on the border line like the *Consolidated Gas case*. There, at the existing rate, the company was earning more than a fair return—here it was earning less; there the proposed reduction was 20 cents—here it is only 10 cents; there the proposed rates applied to past sales showed a return of nearly 5½%, or 90.5% of a fair return; here, upon the basis most adverse to the company, that is, assuming a value of only $2,100,000 and taking the operating costs for the lowest of five (5) years as the basis and adding to the

actual sales the estimated increases, and taking the year up to 1914 showing the result most favorable to the city, that is 1912, the plant would only earn 78.52% of a fair return. This case is not close to the line, but belongs to the class of cases of which this court says, in the *Consolidated Gas case:*

> "It may be, as already suggested, that in many cases the rates objected to might be so low that there could be no reasonable doubt of their inadequacy upon any fair estimate of the value of the property. In such event the enforcement of the rates should be enjoined even in a case where the value of the property depends upon the value to be assigned to real estate by the evidence of experts."

(f) Future increased sales.

We have already stated that the master, in making his estimates for the future, took into account increased sales. We have prepared and here insert, a diagram which shows the actual sales of this property from 1895 to January 1, 1911, the date of the valuation, and also the master's estimated future sales.

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This diagram confirms the soundness of the master's estimate. It also demonstrates the impossibility of sales in such volume as would be required to earn a fair return upon any reasonable value of this plant.

On the diagram is shown the volume of sales that would be necessary in order to earn a fair return upon the value of $2,100,000, which excludes paving and going value, on $2,400,000 which includes going value, and on $2,540,000, which includes both of these items. The sales in the year 1910, including Valley Junction, were 531,991,000 cubic feet (transcript, page 84). For the year 1911, taking its actual operating expenses, less the deductions made by the master, for the three valuations, in order to earn a fair return the sales and the necessary increases over the preceding year would have been as follows:

Valuation.		*Cubic Feet.*
$2,100,000.....	Estimated sales	777,777,800
	Actual sales	531,991,000
	Increase	245,786,800
$2,400,000.....	Estimated sales	888,888,900
	Actual sales	531,991,000
	Increase	356,897,900
$2,540,000.....	Estimated sales	940,740,800
	Actual sales	531,991,000
		408,749,800

These increases are not within the range of possibilities. The actual sales for ten (10) months of 1911 were 450,011,489 (transcript, page 99, heading "1911"). The total sales estimated by the master for that year were only 557,778,529, against 777,777,800 above. Transcript, page 84, shows in the table the increase each year from 1896 to 1910 inclusive. During this period, rates were reduced from $1.30 to $1.00. The increase in 1910 was 34,746,000. To assume that this could jump to 245,000,000 is to go outside of the limits of what is possible.

We insert here a tabulation showing with references to the transcript the population, sales, annual increases in sales, the number of meters, the sales per meter, the sales per capita and the population per meter from 1895 to 1910 inclusive:

Rate Net.	Year.	Population.	Sales in Cubic Feet.	Annual Increase in Cubic Feet.	Meters.	Sales Per Meter.	Sales Per Capita.	Population Per Meter.
Page 43.	Page 89	Page 89.	Page 84	Page 84	Page 84	Page 84	Page 89	Page 90
	1895	56,500	61,100,000	. . . . .	2,448	24,560	1,080	22.71
$1.30	1896	57,000	76,437,000	15,335,000	2,868	26,650	1,340	19.88
	1897	57,800	83,951,000	7,514,000	3,479	24,130	1,450	16.61
1.25	1898	59,000	93,613,000	9,662,000	4,127	22,680	1,590	14.30
	1899	60,500	109,821,000	16,208,000	5,308	20,690	1,820	11.40
1.20	1900	62,100	141,931,000	32,110,000	6,425	22,090	2,290	9.67
	1901	64,500	160,990,000	19,059,000	7,682	20,960	2,500	8.40
1.15	1902	67,200	206,765,000	45,775,000	8,898	23,240	3,080	7.55
	1903	70,000	244,245,000	37,480,000	10,395	23,500	3,490	6.73
	1904	72,900	292,407,000	48,162,000	11,436	25,570	4,010	6.37
1.10	1905	75,600	334,405,000	44,998,000	12,940	25,840	4,420	5.84
1.00	1906	78,000	372,102,000	37,697,000	14,640	25,420	4,770	5.33
	1907	80,200	429,519,000	57,417,000	16,073	26,720	5,360	4.99
	1908	82,300	461,178,000	31,659,000	17,100	26,970	5,600	4.81
	1909	84,400	497,245,000	36,067,000	18,439	26,970	5,890	4.58
	1910	88,900	531,991,000	34,746,000	19,736	26,960	5,980	4.50

This also shows in the first column the rate prevailing at the time in question. A study of the last column, "Population Per Meter," and of the column headed "Sales Per Meter," shows where increases came from. They did not come from increased sales to the individual subscriber on account of decreased prices, but from intensive development of the business resulting in the installation of more meters until the population per meter was reduced to 4.50.

Note also the following computations which show for each of the years 1911, 1912, 1913 and 1914 the sales necessary to earn a return upon each of the three valuations, the sales estimated by the master for each of these years, and the shortages. The operating cost taken is that for the ten months preceding the submission to the master, with his deductions from it:

1911 ADJUSTED—(RETURN 21.60 CENTS PER 1,000 CUBIC FEET.

Year.	Sales Necessary to Earn Return, Cubic Feet.	Sales Estimated by Master, Cubic Feet.	Shortage Cubic Feet.
	VALUATION, $2,540,000.		
1911	940,740,800	550,800,000	389,940,800
1912	946,062,600	580,000,000	366,062,600
1913	990,417,000	605,000,000	385,417,000
1914	1,054,737,400	638,000,000	416,437,400
	VALUATION, $2,400,000.		
1911	888,888,900	550,800,000	338,088,900
1912	894,210,700	580,000,000	314,210,700
1913	938,565,100	605,000,000	333,565,100
1914	1,002,885,500	638,000,000	364,885,500

VALUATION, $2,100,000

1911	777,777,800	550,800,000	226,977,800
1912	783,099,600	580,000,000	203,099,600
1913	827,454,000	605,000,000	222,454,000
1914	891,774,200	638,000,000	253,774,200

(c) The finding that increased sales must be due to increased population.

The prices for gas in Des Moines were during 1896 and 1897, $1.30; 1898 and 1899, $1.25; 1900 and 1901, $1.20; 1902, 1903 and 1904, $1.15; 1905, $1.10; from 1906 to 1910 inclusive, $1.00 (transcript, page 89). Discussing there some of the evidence, the master says:

> "There is a very slight increase after it reaches one dollar per M. C. F., but the preceding years does not indicate whether from decrease in price, judging from the preceding years, it is difficult to say. They vary so greatly up and down during that time that I am at a loss to determine why, but if from cheapness not much over 1,000 feet per meter. While a slight increase in consumption may result from a reduction of ten cents per M. C. F. in price, in my judgment, it is much more apt to result in an increase of customers, and the table in Schedule 4 very clearly shows it, in the increase thereof, in proportion to the inhabitants of the city, as shown by the first column on the right of the table."

Again, he says on page 90 of the transcript:

> "From 1906 to 1910 inclusive, there is only a difference of .83 of a person to the meter. It is clear to me that in the future the annual

> gain will largely depend upon the increase in population and the erection of new residences, for their accommodation and consequently the extension of mains, to accommodate them."

These statements to the effect that an increase in the sale of gas must come from an increase in population are thoroughly borne out by the testimony. Complainant's Exhibit 36, preceding transcript page 3469, is of great value in this connection. The first significant fact is the population per meter. This in 1887 was 35.60. In 1910 it was 4.50; that is, in 1911 when this proposed decrease was to take place, there was practically one gas meter for every family in the city of Des Moines. This is saturation.

The sales per meter are extremely interesting in this connection. In 1887 they were 33,740 C. F. With a constantly decreasing rate, they become in 1910 26,955 c. f. They had varied, having been 26,652 c. f. in 1896, as low as 20,689 c. f. in 1899, 26,689 c. f. in 1907, and 26,955 c. f. again in 1910.

> Note that the next to the last line in the exhibit is for ten (10) months only, and so is not comparable with what precedes it.

In other words, the increase in the consumption of gas in Des Moines has been due to increases in the number of persons using the gas and not to increases in the amount used by each consumer.

In 1905, the rate was decreased from $1.10 to $1.00. The sales in 1910 exceeded those in 1905, 197,586,000 c. f. The following computation which

disregards fractions demonstrates that this increase must be attributed to the following causes:

To decrease in price,	7.33 per cent.
To increase in population,	30.6 " "
To decrease in population per meter, due to efficient management,	61. " "
	98.93 " "

This computation is as follows:

1910, rate $1.00, sales	531,991,000 c. f.
1905, rate $1.10, sales	334,405,000 c. f.
Increase in 5 years with 10c. reduction in price	197,586,000 c. f.

which is accounted for as follows:

(1) Increase due to increased sales per meter:

Sales per meter, 1910	26,960 c. f.
Sales per meter, 1905	25,840 c. f.
Increase in sales per meter	1,120 c. f.
Number meters, 1905	12,940
1,120 c. f. × 12,940 gives increase in sales to meters in use in 1905	14,492,800 c. f.

(2) Increase due to increase in population:

Population, 1910	88,900
Population, 1905	75,600
Increase	13,300
Population per meter, 1905	5.84
$\frac{13300}{5.84} = 2277$ = additional meters due to increase in population.	
Sales per meter, 1910	26,960 c. f.

26,960 c. f. × 2277 gives increase in sales due to increase in population		61,387,929 c. f.
(3) Increase due to decreased population per meter:		
Meters, 1905	12,940	
Increase in meters due to increase in population	2,277	
	15,217	
Actual meters, 1910	19,736	
Increase in meters due to decrease in population per meter	4,519	
26,960 c. f. × 4,519 gives increase in sales due to increased population per meter		121,832,240 c. f.
Total increase as above		197,712,960 c. f.

(NOTE: For the sales, population and number of meters in 1905 and 1910, see Complainant's Exhibit 33; for the sales per meter, see Complainant's Exhibit 36, transcript, opposite page 3468.)

The population per meter in 1905, was 5.84; in 1910 it was 4.50. This is saturation, so that practically for the future, all factors except increase in population are eliminated.

We omit reference to the testimony showing gradual increases in taxes and the cost of labor and materials, and especially oil. The tendency of these things is notorious. The facts negative the possibility of any substantial decrease in operating costs.

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(d) The population necessary to a fair return.

To sell gas, there must be persons to buy it. We insert here a diagram showing the population of the city of Des Moines from 1895 to 1910, with the normal increase in population projected, and with additional curves showing the population which it would be necessary for the city to have to provide the people who would be necessary to buy the gas if the company could manufacture and sell it. Gas cannot be sold without purchasers.

This necessary population is readily computed from the gross sales by taking either the per capita sales, or the sales per meter and population per meter.

The normal population of Des Moines at the end of 1911 was something over 92,000 people. To earn a fair return on $2,100,000 would have required 129,820 people, an increase of over 30%, and to earn a fair return on $2,540,000 would have required 157,023 people, an increase of over 60%. Such things have happened in mining countries, but they have never happened in Iowa. Note in this connection the table showing the population in each year since 1895, page 119 of this brief.

(e) The plant had not the capacity to manufacture enough gas to afford a fair return.

The capacity of the existing plant was about 600,000,000 cubic feet per annum. The master says (transcript, page 87):

> "Professor Marks testified (Pages 2349 and '50, Vol. 2, Record) that when the annual output reached 600,000 M. C. F., that a new holder would become a necessity. (See also Record, pages 2708 to 2716, Vol. 2); Henry I. Lea (Record, pages 1034 to 1046); W. A. Baehr (Record, pages 1581 and 6, Vol. 2); W. W. Randolph (Record, page —, Vol. 2).
>
> "5. According to my recollection, the maximum for any day during the year was 2,228,000 C. F. (See Record, page 1581, Vol 2) and the capacity of all the holders is only 1,607,000 C. F. and, comparing the highest daily output therewith, it will be seen at their utmost capacity they cannot keep in the holders more than two-thirds of such a day's supply for dis-

tribution. The highest daily output must be considered in determining the holder capacity necessary, and the increase in their annual sales will soon render it imperative that greater holder capacity must be provided. Any accident occurring that would stop its manufacture would put the city in darkness and render it necessary before they could turn on the gas to see that every burner in the city was closed, otherwise very disastrous results might follow."

Professor Marks was an engineer who testified for the city. Lea, Baehr and Randolph were engineers who testified for the complainant.

The master says further (transcript, page 88, paragraph 7):

"What this new holder would cost, rendered necessary when the annual sales reach 600,000 M. C. F., Professor Marks did not state, but it should be at least a 2,000,000 C. F. holder, and judging from the cost of the other holders, would probably cost $175,000."

The master said further, on the same page:

"There will be necessary, also, other additions in the manufacturing plant. The enlargement of the purifiers and also additional generators. (See former references.) These are matters that must be considered in determining results in the future upon the increase of sales."

The annual capacity of this plant is 600,000,000 c. f., so that it appears that to warrant the assumption that this plant may earn a fair return it must be assumed that it will manufacture and sell gas to an amount of from one-third to one-half in excess of this capacity, and that there will be a like increase in the population of Des Moines, and that this will immediately occur.

The master estimated (transcript, page 87) that each increase of 1,000 cubic feet in sales would involve the investment of additional capital of at least $2.00. We have already inserted a memorandum showing for each year upon each valuation how much the sales estimated by the master fall short of the sales which would be requisite to earn a fair return. If the sales should reach the volume necessary to earn a fair return, this would involve radical increases in the investment, and this again would radically increase the amount upon which the return is computed, and therefore the necessary return. Taking, for instance, the lowest valuation, the shortages and the necessary additions to the investment on this basis would be as follows:

1911 .....shortage 226,999,200 c. f.
Additional investment $453,998.40

1912 .....shortage 203,099,600 c. f.
Additional investment $406,199.20

1913 .....shortage 222,454,000 c. f.
Additional investment $444,908.00

1914 .....shortage 253,774,200 c. f.
Additional investment $507,548.40

These amounts would have to be added to the amount upon which a fair return must be earned, so that the assumption can not be that possibly the present plant may sell enough gas to earn a fair return on $2,540,000 or $2,400,000 or $2,100,000. To sustain the decree, the assumption must be indulged that it does not clearly appear that there will not be manufactured and sold enough gas, not only to earn a fair return upon the present plant, but also to earn a return upon the additional investment which will be necessary to sell and distribute this gas.

VIII.

The inevitable conclusions from the established facts.

We have attempted to compute and tabulate the results which would ensue if the findings of fact made by the master and approved by the court below are sound. The fundamental factors are the various values, the rate of return, the various operating costs after the master's deductions, and the sales as estimated by the master for each year.

With these fundamental factors it is merely a matter of computation to ascertain the actual net return, the amount on which this would be a fair return, the percentage which this would afford on the various valuations, the amount of property which would earn no return, and would therefore be confiscated, the deficit in dollars and per cent. and the percentage of return confiscated.

These matters have been computed and the results, condensed as much as possible, are shown in the tables attached to this brief. Four operating costs are used, viz.: the average for the five (5) years preceding the date when the ordinance was to be effective, January 1, 1911, giving a net return of 20.75 cents per m. c. f.; the year 1910, giving a net return of 20.35 cents per m. c. f.; the first ten (10) months of 1911, giving a return of 21.60 cents per m. c. f.; and the lowest of the five (5) years, giving a return of 22.90 cents per m. c. f. These are adjusted operating costs, and are less than the actual cost of operation to the company in each instance except the lowest year.

We take for comment here the results most unfavorable to the appellant, based on the lowest operating costs and highest return.

Note that this is based on an operating cost without depreciation, of only 60.43 cents, which includes as an adjustment for taxes 7 mills (transcript, page 80, paragraph 10), while the average for five (5) years, without depreciation, had been 62.58 cents (*Id.*, paragraph 8). We call attention to this because the master's report contains a suggestion (which we believe the other division of this brief shows to be a clear misapprehension) that the company might get this cost down to 60 cents (transcript, page 106).

Returning from this digression, this computation shows as to 1910, based on actual sales and the $1.00 rate, that on $2,100,000 the company barely earned a fair return, and that on the other valuations there was a deficit. The figures are:

	Valuation as Found by Master	Per cent of Return on Valuation.	Amount of Property Confiscated.	8 Per Cent Return on Valuation.	Deficit in Return		Percentage of Total Property and Return Confiscated.
					Dollars.	Per Cent.	
(a)	$2,540,000.00	6.80	$380,526.25	$203,200.00	$30,442.10	1.20	14.98
(b)	2,400,000.00	7.20	240,526.25	192,000.00	19,242.10	.80	10.02
(c)	2,100,000.00	8.22	.....	168,000.00	.....	....	.....

This is the old rate. The same year, at the 90 cent rate, would have given these results:

	Valuation as Found by Master	Per cent of Return on Valuation.	Amount of Property Confiscated.	8 Per Cent Return on Valuation.	Deficit in Return		Percentage of Total Property and Return Confiscated.
					Dollars.	Per Cent.	
(a)	$2,540,000.00	4.73	$1,036.901.25	$203,200.00	$82,952.10	3.27	40.82
(b)	2,400,000.00	5.01	896,901.25	192,000.00	71,752.10	2.99	37.37
(c)	2,100,000.00	5.72	596,901.25	168,000.00	47,752.10	2.28	28.42

This 90 cent rate, if in effect in 1910, would have confiscated from 28.42% to 40.82% of the return and of the property devoted to the public use, and this upon a basis of operating costs lower than were or could have been then attained.

The subsequent years show similar results, with the very significant fact that the deficit increases each year after 1912, when the master's estimated additional investment first manifests itself.

The master intimated (transcript, page 81) that the valuation of the property for taxation might well be increased $1,000,000. This factor has been worked in when it would become effective, and largely reduces the return.

The figures show the results, **with all doubts resolved against the appellant.** It is unnecessary to go farther—but, because the safest measure of future operating costs is the average for five (5) years, we refer briefly to that table. It will not be forgotten that these costs were adjusted down. This table gives the following results for 1910, at the unreduced $1.00 rate:

	Valuation as Found by Master	Per cent of Return on Valuation.	Amount of Property Confiscated.	8 Per Cent Return on Valuation.	Deficit in Return		Percentage of Total Property and Return Confiscated.
					Dollars.	Per Cent.	
(a)	$2,540,000.00	6.36	$521,646.87	$203,200.00	$41,731.75	1.64	20.54
(b)	2,400,000.00	6.73	381,646.87	192,000.00	30,531.75	1.27	15.90
(c)	2,160,000.00	7.69	81,646.87	168,000.00	6,531.75	.31	3.86

Its results for 1911 at the 90 cent rate are:

	Valuation as Found by Master	Per cent of Return on Valuation.	Amount of Property Confiscated.	8 Per Cent Return on Valuation.	Deficit in Return		Percentage of Total Property and Return Confiscated.
					Dollars.	Per Cent.	
(a)	$2,540,000.00	4.50	$1,111,362.50	$203,200.00	$88,909.00	3.50	43.75
(b)	2,400,000.00	4.76	971,362.50	192,000.00	77,709.00	3.24	40.47
(c)	2,100,000.00	5.44	671,362.50	168,000.00	53,709.00	2.56	31.97

The sales for these two years are actual, except the last two months of 1911. At the unreduced rate, at a valuation of only $2,100,000 the plant failed to earn a fair return, and for 1911 showed $671,362.50 or 31.97% of this value, earning nothing. At the actual value, $2,540,000 the amount confiscated is $1,111,362.50 and the percentage 43.75.

The court said in his opinion (transcript, page 163) that the master found that the 90 cent rate would afford a fair return. His error is demonstrated. The master said (transcript, page 109) that this rate would return at least 6% on $2,100,000. The returns on this sum which his figures show for each year, at the various operating costs, are:

	Average 5 years adjusted.	1911 adjusted.	10 months 1910 adjusted.	Lowest year.
1910	5.18%	5.40%	5.08%	5.72%
1911	5.44%	5.66%	5.33%	6.00%
1912	5.69%	5.92%	5.58%	6.28%
1913	5.62%	5.85%	5.51%	6.20%
1914	5.50%	5.72%	5.39%	6.07%

It is only the lowest operating basis that brings this up to 6% in any year.

To make the net earnings approximate a fair return it is necessary to cut the value the amount of the paving and going value items, $440,000 (17% of $2,540,000) and the return 25%, and to radically adjust down the actual operating expenses.

Facts such as these negative the doubt that sometimes renders a trial of rates necessary.

In

Lincoln Gas and Electric Light Company vs. City of Lincoln, 223 U. S. 349,

the court below ordered the bill dismissed without prejudice to permit a trial of the rates. This court reversed that order and provided for a restraining order, thus establishing the doctrine that a trial of the rates is not in all cases necessary to the establishment of the facts. The evidence in that case was by no means as complete and definite as it is here. Nor is the *Consolidated Gas case* a precedent for the contention that under the facts here, the rates should be tried.

(1) The evidence in the *Consolidated case* as to revenues and operating costs was confined to a single year (page 48, line 10), while here it covered a period of over twenty-five years.

(2) The evidence as to annual sales, sales *per capita*, sales per meter, and the population per meter, in the instant case covers a period of twenty-five years, during which the rate was reduced from about $1.90 per m. c. f. to $1.00, furnishing the most complete information for the determination of future sales, and the effect of decreases in rates; while in the *Consolidated case* the record did not contain a full or complete history of the plant. (See printed transcript in that case, page 5754.)

(3) In the *Consolidated case* the proposed reduction was from $1.00 to 80 cents, a reduction of 20 cents, while in the present case the proposed reduction is 10 cents.

(4) In the *Consolidated case*, the values accepted were those of the complainant's witnesses, while in the instant case the master's valuation is less than three-fourths of the average of the complainant's witnesses.

We quote from page 50 of the opinion in the *Consolidated case*:

> "In this case a slight reduction in the estimated value of the real estate, plants and mains, *as given by the witnesses for the complainant*, would give a 6 per cent return upon the total value of the property as above stated."

If the same thing be done here, instead of a slight reduction in the estimated value as given by the witnesses for the appellant, to afford a fair return upon the total value of the property, it would be necessary to reduce this average value from $3,207,047 to $1,230,333. In the *Consolidated case* a reduction of 10.88% in the valuation as fixed by the complainant's witnesses afforded a full return. In this case, to produce a like result, it would be necessary to reduce this valuation over 60%.

(5) In the *Consolidated case*, at the existing rate for the year preceding the date when the ordinance became effective, the plant earned a net return of 10.575% upon the valuation adopted by this court; in the instant case the plant earned at the $1.00 rate in 1910 less than 8% upon $2,100,000, the lowest valuation fixed by the master.

(6) In the *Consolidated case*, the proposed rate, applied to the sales for the single preceding year, showed a return of 5.439%. This is .561 of one per cent. less than the fair return of 6% found in that case, a confiscation of only 9.35% of such fair return. In this case, the proposed 90 cent rate, applied to the actual results of the single preceding year, showed (taking 21.60 as the net return per m. c. f.) upon the valuation of $2,100,000 a confiscation of 32.49% of the return, and upon $2,400,000 a confiscation of 40.93% of the return, and upon $2,540,000 a confiscation of 44.18% of the return.

Nor is the case of

Knoxville vs. Knoxville Water Company,
212 U. S., 1,

a parallel case. There, the testimony as to the income and expense was limited to the fiscal year ending March 31, 1901, while it was not until seven years later that the case was presented to this court. The deficits claimed in the *Knoxville case* were between $2,480 and $4,640. This is not comparable with the deficits that exist here.

IX.

What does the clear and satisfactory evidence rule require?

In arriving at the facts we have been discussing every doubt was resolved against the appellant. The analysis of these facts shows that there is no reasonable hypothesis upon which the 90 cent rate will afford the appellant a fair return.

We submit that the limit of the rule is to require the establishment of each ultimate fact by this clear and satisfactory proof. Doubts as to these facts, where such doubts exist, may properly be resolved in favor of the validity of the enactment. But after this has been done, this rule neither requires, nor may it be invoked to justify, unreasonable, improbable or speculative inferences from the established facts. Unless this be true, it is useless to establish facts.

Let us apply this concretely to the case at bar.

(a The master, after deducting from the operating costs all debatable items, ascertained the average for five years, the lowest year, the year 1910, and the first ten months of 1911. These are facts established by uncontroverted proof.

Would any reasonable man be justified in assuming that in 1911, 1912, 1913 and 1914 the plant could be operated for less?

(b) The master found that the sales for 1910 were, including Valley Junction, 531,991,000 c. f. and that the increases for the five (5) years, 1906 to 1910 inclusive, were respectively 37,697,000 c. f., 57,417,000 c. f., 31,659,000 c. f., 36,067,000 c. f., and 34,746,000 c. f.

These are undisputed facts. Would any reasonable man consider it possible that the sales for the next three years could possibly be respectively 777,777,800 c. f., 783,099,600 c. f. and 827,454,000 c. f.?

(c) The population of Des Moines in 1910 was 88,900. To consume enough gas to earn a fair return on even $2,100,000 in 1911 a population of 129,820 would be required.

Would any reasonable man deem this possible?

These assumptions are based on a valuation of only $2,100,000. If what we believe to be the correct valuation, $2,540,000 be taken, then these results already absolutely unreasonable become wholly absurd.

The master required in this case the establishment of the facts beyond a reasonable doubt. Where facts are so established, reasoning based upon them must accept and treat them as facts; otherwise it becomes mere speculation.

Willcox vs. Consolidated Gas Company, 212 U. S. 19,

recognizes the right to a decree without a trial of the rates if the proof be sufficient. In

Lincoln Gas Company vs. Lincoln, 223 U. S. 349,

the order reversing the case and directing the court below to grant a temporary injunction pending the trial on the merits recognizes the same rule.

If this be the rule, then we submit that proof more complete and convincing than that offered in the case at bar is impossible.

How much of the fair return is confiscated is immaterial. The city has no right to confiscate any part of the appellant's property. If a case be close to the line, it may suggest a doubt as to whether there will be *any* confiscation; but where, as here, it is demonstrated that some of appellant's property will be confiscated, the appellant is entitled to a decree, even though it appears that not all of its property will be destroyed; and, further, even though it may be debatable whether the proportion confiscated will be 46% or 31%.

X.

The peculiar nature of the decree.

The court below in his opinion found that the complainant's suit should be dismissed "with prejudice" and incorporated the quoted language in his decree (transcript, pages 167 and 173). After this decree on the merits, he provided further (transcript, page 173):

> "At any time on and after three years from this date, complainant, its successors or assigns, may on motion reinstate this case with all the pleadings and evidence now on file, with the same and like effect as though filed for such subsequent hearing. And each party may then file such additional pleadings and take and file such additional evidence as to each party may be deemed advisable."

Three courses depending upon its conclusion as to the proof were open to the court below:

> (a) To dismiss the suit without prejudice, or
>
> (b) To direct a trial of the rates and the production of further proof as to the results of this trial, the court, in the meantime, holding the suit undecided, or
>
> (c) To dismiss the bill on the merits.

The provision of the decree which dismisses the bill upon the merits and renders a judgment against the complainant for the costs is an adjudication that the complainant did not have the right to maintain this suit at the time it was brought. The provision which we have quoted from the decree is anomalous. It provides that after three years the

case may be reinstated, that the old proof may be used and that additional pleadings and additional testimony may be filed and taken.

The decree which has already been entered, from which this appeal has been taken, adjudicates that the appellant had no right to maintain this action when it was brought, and in any supplemental proceeding after three years the court below would be without jurisdiction to review or modify this decree. In any supplemental proceeding, this decree would undoubtedly be pleaded as an adjudication.

By the amendments which the court suggests perhaps a new cause of action might be set up, if there be anything left not determined by the adjudication already had. But if there were such a new cause of action, it could only be tried in a new suit, and no order in any other suit could make the testimony in such other suit competent in this new suit.

Cases frequently arise where courts temporarily retain jurisdiction in order to make such further orders as may be necessary to give effect to and carry out the decrees which they have entered, but there, so far as we are advised, are no cases where courts have attempted to retain jurisdiction in order to review or reverse or modify their own final decrees. The rule as stated by this court in

Bronson vs. Schulten, 104 U. S. 410,

is as follows:

> "It is a general rule of the law that all the judgments, decrees, or other orders of the courts, however conclusive in their character, are under the control of the court which pronounces them during the term at which they are rendered or entered of record, and they

may then be set aside, vacated, modified, or annulled by that court.

But it is a rule equally well established, that after the term has ended all final judgments and decrees of the court pass beyond its control, unless steps be taken during that term, by motion or otherwise, to set aside, modify, or correct them; and if errors exist, they can only be corrected by such proceeding by a writ of error or appeal as may be allowed in a court which, by law, can review the decision."

The first part of the decree in the instant case which dismisses the bill with prejudice completely disposes of the case and is final in its character. If the decree had said in so many words that notwithstanding this, the court would at any time after three years, hear the parties upon the same or additional pleadings and upon the same or additional testimony as to the correctness of this final decree which it entered in 1912, it would hardly be contended that such an order was within the power of the court. The court might have refused to decide the case upon the merits and have postponed this decision, but it had not the power to decide the case upon the merits and then to reserve to itself the right after three years to decide it over again either upon the same or different pleadings and testimony.

XI.

The situation so far as the appellant is concerned.

The one essential thing, so far as the appellant in this case is concerned, is that it have the right to have the facts which would ensue from the ap-

plication of this 90 cent rate determined and a decree entered in accordance with those facts. The master has estimated the actual deficits which would ensue from the application of this rate if the item of going value be included, in amounts varying from $60,329.50 to $86,790.20. These amounts so far as this record goes, measure the importance to the appellant of determining this question without an actual trial of the rates, if without such a trial the facts have already been shown by clear and satisfactory evidence. But this is not essential; if it is necessary for the appellant to sustain this loss, as the price of the evidence which will establish these facts by clear and satisfactory evidence, it must bear the loss.

It is essential, however, that at some time, either by testimony such as was introduced upon the trial in the court below, or by testimony based upon the actual trial of the rates for such period as is necessary, the appellant have an opportunity to present to the court the facts necessary to clearly establish whether this rate is or is not compensatory.

The master was in doubt, but his doubt would have been removed if he had not erroneously eliminated the items of paving and going value. He said, referring to an order such as was made in the *Consolidated Case*, for a dismissal of the bill without prejudice (transcript, page 107):

> "On the other hand, should a like order be made in this case, it might result in a loss to the complainant of from two to three hundred thousand dollars in the next five years, which does not look like a 'square deal' nor comport with my ideas of justice, but that was also true in the *Consolidated Gas Co.* case, and in that case a loss of from half a million to a million

> dollars might result therefrom annually. It is one of the hardships that may result from rate making by a tribunal charged with that power and duty."

The court below was in doubt because, without such a doubt, he never would have put into his decree the anomalous provision to which we have called attention; and this doubt may have been due to his error in excluding the item of paving, and to his error of fact in assuming that the value fixed by the master was $2,240,928, and that this included the item of going value.

Under these circumstances, we submit that it is clear that if these facts have not yet been established by clear and satisfactory evidence, such an order should be entered now as will permit this. It would add nothing to the force of what we have already said for us to urge that the facts in this case which the master found to be established beyond a reasonable doubt compel the conclusion that the property would not earn a fair return upon even $2,100,000. We believe we are not wrong upon this proposition, but whether we are right or wrong, there remains the fact that is the fact of paramount importance, namely, that if these facts cannot be established without an actual trial of the rates, it is essential that such a decree be entered as will permit such a trial. The temporary losses are important, but the vital thing is that there be preserved to the appellant its right to have these facts established and to have a decree in accordance with them.

It has been the practice of this court, we believe, without exception, to preserve this right in these cases. Where the bill has been dismissed it has been in each case without prejudice.

Stanislaus County vs. San Joaquin C. & I. Company, 192 U. S. 201;
Knoxville vs. Knoxville Water Company, 212 U. S. 1;
Willcox vs. Consolidated Gas Company, 212 U. S. 19;
Gas Company vs. Cedar Rapids, 223 U. S. 655;
Minnesota Rate Cases, 230 U. S. 352;
Missouri Rate Cases, 230 U. S. 474;
In re City of Louisville, 231 U. S. 639;
City of Louisville vs. Cumberland Telephone & Telegraph Co., 231 U. S. 652.

This court affirmed the court below in

Northern Pacific Railway Company vs. North Dakota, 216 U. S. 579;

because of uncertainty in the proof, but modified the decree so as to permit the appellant to present the facts disclosed by a trial of the rates, saying in this connection:

> "It seems to us that the nearest approach to justice that can be made at this time is to follow the precedent of *Willcox vs. Consolidated Gas Co.*, 212 U. S., 19, as nearly as may be, and affirm the decree, but without prejudice to the right of the railroad company to reopen the case by appropriate proceedings if, after adequate trial, it thinks it can prove more clearly than at present the confiscatory character of the rates for coal."

The city may always protect itself. After a decree against it, even on the merits, it may re-enact the ordinance with or without modifications,

if and whenever it believes there has been such a change in conditions as to warrant it. The appellant is without any protection, if it is deprived of the right to show to the court the actual facts.

The decree of the court below does not furnish adequate protection to the appellant. It provided that the bill should be dismissed "with prejudice," that after three years the complainant might move to reinstate the case, that the provision for refunding the difference of ten cents per thousand cubic feet between the rate charged and the rate in controversy could be superseded by filing a bond in the sum of $150,000, but that unless an appeal was taken within sixty days, claims for this refund should be presented to the court. The only order that would furnish adequate relief to the appellant, if it were necessary to try the rates, would be an order which would continue the present case, and afford an opportunity to present to the court the results of such a trial. If upon the results of such a trial the court found that the ordinance was not compensatory, the appellant would be entitled to the excess collected while the restraining order was in force and would be protected against claims for this excess, which, if the bill were dismissed without prejudice, it would have to meet before the rights of the parties were actually determined. Such a course was pursued in the *Louisville case* by the court below, and was held by this court to be within the discretion which the mandate permitted.

We respectfully submit that the decree of the court below should be reversed and that a decree upon the merits for the appellant should be ordered;

or, if the appellant should not be found entitled to this relief, that the case should be reversed with such directions to the court below as will permit a submission to that court of the facts which have been disclosed by the trial of the rates, which have actually been in effect since October 10, 1912, when the decree of the court below was entered, so that the court may determine the rights of the parties as these facts show them to be.

Respectfully submitted,

NATHANIEL T. GUERNSEY,
Solicitor for Appellant.

GEORGE H. CARR,
Of Counsel.

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FOR

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Supreme Court of the United States.

No. 75

OCTOBER TERM, 1913.

DES MOINES GAS COMPANY,
Appellant,

vs.

CITY OF DES MOINES *et al.*

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF IOWA.

BRIEF AND ARGUMENT FOR APPELLANT.

DIVISION II.

NATHANIEL T. GUERNSEY,
Solicitor for Appellant.

GEORGE H. CARR,
of Counsel.

Stillman Appellate Printing Co., 51 Broad St., N. Y.

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Supreme Court of the United States,

No. 397.

DES MOINES GAS COMPANY,
Appellant,

against

CITY OF DES MOINES, *et al.*,
Appellees.

Appeal from the District Court of the United States for the Southern District of Iowa.

BRIEF FOR APPELLANT.

Division II.

In this division of the brief, we propose to discuss the testimony for the purpose of making clear the soundness of our statement that the facts found by the master were most conservative, and were so clearly established that it may be confidently asserted that these findings are not more favorable to the appellant than the facts. In considering these questions, we shall substantially follow the order of their consideration by the master.

I.

Real Estate.

This term included merely the ground, without the improvements (transcript, page 48). The

master first stated the location to be an advantageous one, commenting upon some of its features. He says as to the witnesses (transcript, page 48):

> "These witnesses both for the complainant and defendant appear to be excellent men and qualified from their occupation and business to testify concerning the market values of this property, but they differ very widely in relation thereto, and it is simply impossible to reconcile their evidence."

Without going into details, the names of the complainant's witnesses and the total value arrived at by each of them, with references to the pages of the transcript where these totals are stated, are as follows:

H. N. Porter	(page 444)	$235,000
Mack Olsen	(page 386)	232,400
R. R. McCutchen	(page 460)	225,000
B. F. Kauffman	(page 357)	223,670
R. P. Bolton	(page 413)	221,160
Total		$1,137,230
The average of these witnesses is...		$227,446

A like statement as to the witnesses for the appellee is as follows:

F. A. Mathis	(page 1560)	$101,020
B. S. Walker	(page 1487)	97,500
A. O. Hauge	(page 1472)	97,000
W. H. Arnold	(page 1516)	96,200
A. S. Wilcoxen	(page 1531)	85,000
E. C. Pease	(page 2290)	92,900
Total		$569,620
The average of these witnesses is....		$94,936

The average of all the witnesses is $155,168.19. The amount allowed was $150,000 (transcript, page

48). The master says at that page, referring to the witnesses for the appellant and the appellee:

> "In my judgment the former are all too high and the latter too low. As a rule, under such circumstances, it has been my experience that the true value lies between them and have reached the conclusion that $150,000 is about right. In my judgment, should the Complainants sell their property and undertake to change their location, they could not get as good a place for less than $150,000, and it is very doubtful if they could get it for that."

An important factor should not be overlooked in this connection. It would be necessary to buy real estate at the very outset and there would be a loss of not less than three years' interest and taxes, which would have to be added to its original cost. Taking the interest at 6% and the taxes at the then current rate, 2¼%, we have for the three years 24¾%. The master made no addition to this $150,000 on this account (transcript, page 60, near bottom of page), so that it is 124¾% of the base value of the real estate without these carrying charges. This would make the base value of the real estate as found by the master about $121,000, which is about $106,000 less than the average of complainant's witnesses, about $34,000 less than the average of all of the witnesses, and less than $30,000 more than the average of the witnesses for the city.

If the defendants' base value on real estate were accepted it would not change the total valuation $30,000, and could not affect the general result.

This condition differs radically from the condition which exists where the complainant's testimony is accepted substantially without modification.

II.

The base figures for the manufacturing plant and distribution system.

The next step of the master in making the valuation was to ascertain what were called the base figures in the cost of reproduction of the manufacturing plant and distribution system; that is, of the buildings and apparatus and other things used in connection with the manufacture of gas and the distribution system. He defined base value (transcript, page 53), as

> "what it would cost to produce it at the present time new, without adding thereto any overhead charges."

As will appear as we follow his report and take up the overhead charges, he meant by base value the cost of the labor and material going into any structure without anything for going value, or for engineering, interest and taxes during construction, contingencies, omissions, personal injuries and the various other items which are grouped under the heading "overhead charges" or "underlying charges." These he takes up separately.

The complainant offered as witnesses three "experienced consulting gas engineers" (transcript, page 52); two, Henry I. Lea and William A. Baehr, from Chicago, and one, William W. Randolph, from New York; while the defendants offered one en-

gineer, Professor William D. Marks, of New York. The master says (transcript, page 52):

> "These engineers are each and all competent witnesses, and of large experience in their profession, and qualified to testify in relation to the value of the property of the complainant."

He says further, on the same page, that they were each and all extensively examined and cross-examined, and that their testimony was very full, and clearly rendered.

The master adopted as his basis for the buildings, contents of buildings, yard structures, miscellaneous, and distribution system *a combination of the lowest figures* placed on these respective items by the engineers who testified as witnesses for the complainant. He says (transcript, bottom of page 53):

> "As before stated, an average valuation gives a result to which none of them agree, and which in my judgment would not result in obtaining a 'Base' upon which to build, that would be sustained by evidence in the case. However, it will be observed by the Exhibits to this report as before stated, that the Complainant's three engineers, in fact only agree on the lowest valuation on each item as shown in the comparative valuations as stated in the Exhibits to this report—'J,' 'F,' and 'K.'
>
> It is true that they do not all agree that it is not worth more than the lowest valuation made by any of them. But the greater includes the less, and when they value it more, then they do agree that it is at least worth the lowest valuation made by any one of them, and we then have a 'Base' value sustained by all three of them and sustained by the clear weight of the evidence in the case. Exhibits

> 'C-a,' 'G,' 'H,' 'I,' and 'K' to this report, show the figures selected and the letters 'B,' 'L,' 'R' show whose valuations they are, followed by the number and page of the exhibit from whence they are taken, and are intended to be self-explanatory and the totals are as follows:"

Omitting the totals and referring to Exhibit C-a, to the master's report which follows the report (transcript, page 119), it will appear that some twenty-two buildings are listed. On the purifying house and generator house, Randolph's figures which were the lowest, were adopted; on the fire brick shed, meter and governor house, retort and generator house, coal shed and condenser room, boiler and engine room, boiler house extension, and some other buildings, Baehr's figures, which are the lowest, were adopted; while for the barrel oil store room, fire hose house, coke shed, coke rack and the oil barrel storage house, Lea's figures, which were the lowest, were adopted.

The same method was followed as to the contents of buildings, Exhibit G to the master's report (transcript, page 123), and holders and other yard structures, Exhibit H to the master's report (transcript, page 124); miscellaneous, Exhibit I to the master's report (transcript, page 125); and the distribution system, Exhibit L to the master's report (transcript, page 128).

The result at which the master arrived, $1,975,020, exceeded the corresponding items in the valuation of Professor Marks. This the master refers to (transcript, page 66), saying:

> "The valuation of the physical property by all of the complainant's witnesses *have each*

and all been reduced very greatly, and the result exceeds the valuation of Prof. W. D. Marks. When his unit valuation of the works and their equipment is ascertained it amounts

to	$429,004
To this add mains	652,947
House services	274,720
Lamp services	18,653
Meters in use, page 61	188,981
Distribution tools, page 64	2,977
Work tools, page 63	2,977
Rejected items, page 76	280,081
Total	$1,850,340
Add building, omitted by him, at	15,000
Total unit cost	$1,865,340
While the unit cost adopted is	$1,975,020

An examination of the evidence will show that the professor did not include in his valuation of the mains, any overhead charges, save what he calls contractor's profit, or else I am unable to understand his evidence. (See Record, Vol. 2, pages 2387, 2327 to 30, 2792; 2606 and 7; 2622.) It is not necessary to discuss the Buffalo Chart, from which he obtained the unit prices per foot. I simply invite an examination of his entire evidence."

The last sentence in this extract is significant. The master believes that an examination of the evidence of Professor Marks will vindicate his (the master's) conclusions.

Certainly, the master's method of a combination of low items, if it is subject to criticism at all, is subject to criticism from the standpoint of the appellant and not from that of the appellees.

III.

Overhead Charges.

The master defines what these items include, beginning at the middle of page 54 of the transcript. He says generally, on page 55:

> "It must be borne in mind that these expenditures are all made during the promotion and construction of the plant, and are necessarily a part of the cost thereof. No overhead charges that do not inhere in and add to the cost thereof should be allowed as a part of its physical value. It is not a question of what was actually expended therefor in the plant in question, but what would it cost to reproduce a similar plant at the present time. It is through this method we reach the present value of this plant new, and then when it is properly depreciated, according to the condition, life and age of its various parts, we reach the present value of the plant in its present condition. It is not a perfect method, but it is the best method therefor, and results as nearly as possible in giving the present value of the plant. No other method known has proved so satisfactory. These overhead charges are treated by the various engineers under the subtitles of—promotion, organization, engineering, casualties, contingencies, administration, loss of interest and taxes, and briefly are as follows."

After listing them the master discusses the various overhead charges that are allowed by the witnesses. He states that the most satisfactory witness on this subject was John W. Alvord (transcript, bottom of page 56), and that his lowest percentage was 17. He then adopts an allowance of 15% (transcript, page 57). Professor Marks con-

ceded 12½% (transcript, page 56). The master also allowed in making his physical valuation, that is, the valuation before he considered his item of going value, $6,923 for organization expenses (transcript, page 60, fourth line from bottom), which may be properly treated as an overhead item. The total amount which he allowed, therefore, was

15% of total $1,975,026 (transcript, page 54)	$296,253.90
Organization	6,923.00
Total	$303,176.90

It is worth while to compare this with the estimates of the complainant's witnesses. Lea made the overhead charges $524,118 (transcript, page 56, lines 9 and 10) plus $68,023. Baehr made them $615,603 (transcript, page 56, line 23). Randolph made them $420,086 (transcript, page 56, line 28).

The result of the master's conservatism in determining his base and conservatism in the adoption of his percentage of overhead charges is to practically cut in two the testimony of the appellant's witnesses upon this subject.

IV.

Depreciation.

This is the next item which the master takes up. He begins his discussion of it by this statement (transcript, page 57):

> "The 'Base Value' with the 'Overhead Charges' added, give us the present value of the physical plant new, and in order to get the

present value of the physical plant, it becomes necessary to determine to what extent this amount should be depreciated. The plant in question is not new, but much of it has been in use for many years and it is therefore, not as valuable as a new plant would be."

The master proceeds to discuss the testimony of the various witnesses upon this subject, and here adopts the highest rate of depreciation, giving the lowest present value. The lowest figure for the present per cent. condition of the plant was Lea's, 85.3%, and this the master adopted (transcript, page 59).

On page 59 of the transcript, the master states that his report shows the total cost new with overhead charges to be $2,271,280, from which he deducts the present value, 85.3%, arriving at the amount of his depreciation. The entire computation from which he reaches this conclusion is:

Base figure	$1,975,026	
Add to cover overhead charges, 15%	296,254	
		$2,271,280
Present value, 85.3%		1,937,402
Depreciation		$333,878

The master comments upon the fact that this depreciation happens to correspond with the average of the four engineers. He says (transcript, page 60):

"The results above stated in relation to depreciation are reached in the manner above stated, and after examining the many phases of the subject by those whom I have regarded competent to speak on the subject, and I was a little surprised that the result is the average

of rate as given by the four engineers on the totals of their depreciation.

William A. Baehr, total depreciation	$310,325
W. W. Randolph, total depreciation.	282,381
Henry I. Lea, total depreciation...	380,009
Prof. Marks, total depreciation ...	363,363
Total	$1,336,078
Divided by 4	$334.019
Depreciation actually made	333,878

By comparing these amounts it will be seen there is less than $150 difference in the total amount of depreciation, and the average depreciation of the four engineers, who are really the most competent to speak upon the subject, and hence my conclusion is that it is about as near correct as can be reached by the evidence in the case."

To digress here for a moment, the master obtains his total physical value by adding to the items which we have considered working capital and organization expenses, the computation being made by him at page 60 of the transcript, and being substantially as follows:

Working capital	$140,000
Real estate	150,000
Organization expenses	6,923
Meters in stock	6,603
Present value of physical property aside from above items	1.937,402
Total physical value	$2,240,928

The analysis which we have just made of the manner in which this amount, $2,240,928, was built up, taken in connection with the fact that the master next (transcript, page 61) takes up paving over mains and says that $140,000 should be deducted on this account and next, on page 62 of the trans-

cript, takes up going value, and on page 63 says that he regards $300,000 as all *"it is worth over and above its physical value,"* conclusively demonstrates that the court below was wrong in his assumption that this $2,240,928 was the value adopted by the master, and also was wrong in his assumption that this includes going value.

V.

Going Value.

The master takes this up at page 62 of the transcript. The only testimony upon this question offered by the defendants was that of the witness Marks, who put this item at $352,000 based on 90 cent gas (transcript, pages 63 and 3610).

The estimates made by the three witnesses for the appellant, with the references to the pages of the transcript, are

W. W. Randolph (pages 63 and 3415),	$500,000
Henry I. Lea (pages 63 and 3245),	583,000
William A. Baehr (pages 63 and 3343),	509,795

The master's estimate is a little over 80% of the testimony of the lowest witness, and is less than 60% of the testimony of the other witnesses upon this proposition. The master discounts all the witnesses and puts this at an amount which he is satisfied a purchaser would be willing to add to the physical value if buying the plant, and which the owner would be warranted in demanding in addition to this value, if selling it. We quote from the transcript (page 63):

> "But I am not inclined to accept without discounting, any of these estimates, but fix the

'Going Value' at $300,000. It may be asked on what basis this amount is determined. The evidence followed strictly might require me to make it higher, could my mind rest satisfied that the 'Going Value' of this concern is worth more, but I cannot feel satisfied that such is the case, and regard $300,000 as every dollar it is worth *over and above its physical value,* and in my judgment, it is worth that much more than a plant would be that had to develop its business. But that would be much more rapid, in my judgment, than is estimated. I think a purchaser would be willing to add this amount for its developed business, and that a seller would not be willing to sell unless he got that much more than its physical value, but I could not give the mental process by which this conclusion is reached any more than a jury could do so, under like circumstances, but it is nevertheless my judgment under all the evidence in the case."

VI.

The comparison of the totals.

This continual paring down by the master resulted in a very large deduction from the estimates of value shown by a strong preponderance of the evidence. As we have already said, there were four witnesses on this proposition. The witnesses which were sworn by the appellant were William A. Baehr, Henry I. Lea and W. W. Randolph. Each of them was a gas engineer who for years had devoted himself solely to gas engineering in its practical aspects, and neither of them had any connection with the appellant.

Lea states his experience, beginning at transcript, page 652; Baehr his, beginning at page 974; Randolph his, beginning at page 1143; Professor Marks, the only engineer who testified in behalf of the city, had had little, if any, recent practical experience in gas matters.

We call special attention to transcript, pages 1619, *et seq.* It appears that in 1872, Professor Marks (transcript, page 1623) kept the books for a construction company engaged in constructing a gas plant in St. Louis; that his next work with reference to a gas plant was in 1900, a small plant at Fostoria, Ohio (transcript, page 1623), having not more than eight or ten miles of mains (transcript, page 1624), where they were making and selling gas when Professor Marks arrived there, and his attention was given particularly to the electric lighting end of the plant (transcript, page 1624). In 1903 or 1904, Professor Marks was concerned in the construction of a small gas plant in Durham, North Carolina, having five or six miles of mains (transcript, pages 1624-1625). He says at page 1625:

> "Q. Aside from your experience in St. Louis and Fostoria and Durham you have mentioned, have you had any experience in the construction of a gas plant? A. You mean as engineer?
>
> Q. Yes, or any other way what have you had to do with building a gas plant, I don't care whether it is as engineer or as contractor or as laborer? A. I have had no experience in the actual building of anything more than these three plants, but in the estimating for others I have had a great deal of experience.

Mr. Guernsey: I move to strike out the last part of the answer, I didn't ask the witness for that.

Q. Now what experience have you had in designing gas plants or gas machinery other than with reference to the three plants that have been referred to, during the entire forty years? A. I have originated none whatever.

Q. Did you design the plant at St. Louis, you did not, I understand? A. I said I had originated none whatever."

Professor Marks had testified for the city in the *Consolidated Gas case*, in a Buffalo rate case before a commission, and in a Jersey City case before a tax commission, and also before the Minneapolis city council, and he did some work in Cleveland.

Comparing the work done in the instant case with these, he said as to the inventory furnished by the company in this case (transcript, page 1631):

"I admire it very much for its extraordinary completeness."

He says at the top of page 1632:

"Q. Does that cover the appraisals that you referred to on your direct-examination? A. Let's see, New York 11, Buffalo 4, Cleveland 3, Jersey City—yes, I may have forgotten some, but I think that is all."

The master held that Professor Bemis, who testified largely in an argumentative way from the facts developed by the other witnesses, was not a competent witness upon value, saying (transcript, page 67):

"He is undoubtedly a very valuable man to assist in a case like the one at bar. But he is not a qualified expert upon values.

> There is a very great difference between information gained by investigation and from statistics, and that gained by actual experience in the business. It is evident that for some time his efforts have been directed in the work of securing lower rates for the public, who are patrons of public utilities, and his efforts in that direction are laudable, and in this work he has gained a large amount of general information, but any man in so doing will have his eyes open for everything bettering his side of the case. Much of his evidence was purely argumentative and incompetent, unless made so by the extensive cross-examination by complainant."

The testimony presented, therefore, was the testimony of three witnesses of large experience offered by the appellant against one witness of very limited experience offered by the appellee, all of the witnesses being in the judgment of the master "excellent men." Under these circumstances, the preponderance was clearly with the appellant; but the master was far from accepting the conclusions of its witnesses.

The present value of the plant, including going value and deducting depreciation, as found by the three engineers who were the complainant's witnesses, was, with the pages of the transcript, as follows:

William A. Baehr,	(page 3343)	$3,221,166
Henry I. Lea,	(page 3245)	3,261,705
W. W. Randolph (page 3415, $3,420,514 less $282,331),		3,138,183
Average,		$3,207,018

The valuation adopted by the master, and including going value, is $807,018 less than the aver-

age of these three witnesses, or just under 75% of this average. If going value be also excluded and the value of $2,100,000 taken, it is $1,107,918 less than this average, or about 60% of it.

Certainly, it cannot be said that the value has not been established by clear and satisfactory evidence. The master says (transcript, page 46):

> "It is perhaps true that in determining the value of the complainant's property that a preponderance of the evidence under the circumstances would be sufficient but, it has not been necessary for me to adopt such a rule under the evidence in this case, because findings of value are not only sustained by a preponderance of the evidence, but also by such evidence, as clearly satisfies me of their correctness. It is true that the evidence is quite conflicting, but the conflict therein has been eliminated as far as possible and when this is done, in my judgment, **the conclusions reached are fully sustained by the evidence, which meet the requirements of the rule as enunciated by the Supreme Court of the United States,** as hereinbefore shown and at the same time are the same as would have been reached in case the rule only required a preponderance of the evidence to sustain them. In determining the value of the complainant's plant, **it has not been necessary to distinguish between preponderance of the evidence, and clear and satisfactory evidence. Under either rule, the result in my judgment should be the same.**"

VII.

The Rate of Return.

This is a question of fact. The appellant introduced a large amount of testimony upon this question, the witnesses being Homer A. Miller (transcript, page 1291), Simon Casady (transcript, page 1301), and Arthur Reynolds (transcript, page 1396), each of them a banker in Des Moines; Andrew Cooke (transcript, page 1375), vice president of Harris Trust and Savings Bank, which with its affiliated concerns, Harris Forbes and Company of New York, and N. W. Harris and Company of Boston, handles over one hundred and fifty millions of investment bonds annually; Harold Almert (transcript, page 1365), engaged with H. M. Byllesby and Company of Chicago, in examining and reporting on public utilities; W. C. Harbach (transcript, page 1401), furniture manufacturer in Des Moines; C. S. Walker (transcript, page 1405), a vehicle manufacturer in Des Moines; J. E. McDonell (transcript, page 1410), an iron manufacturer in Des Moines, and E. S. Root (transcript, page 1414), a manufacturer of caskets, ambulances and hearses in Des Moines.

The master states the effect of this testimony (transcript, page 73) as follows:

> "The evidence shows that in the banking business in Des Moines, from 8 to 15 per cent. is expected and usually realized, that the rate of interest on notes secured by farm mortgages, from 5½ to 6 per cent.; on manufacturing plants from 12 to 25 per cent.; on loans secured by mortgage on residence property in the city, from 6 to 8 per cent.; on business houses with an assured rental income, from 4½ to 6½ per cent."

He says, in his consideration of this question (transcript, page 72):

> "We have quoted so fully from this opinion, because so much that is said therein applies with equal force to the case at bar. Especially is it true, of what is said in regard to the danger of competition and the rule of law which should govern in fixing the rates. The allowance of a rate which will enable the company to earn 6 per cent. on the value of its property in the City of New York by the lower Court, is clearly approved by the Supreme Court in its opinion, although on other grounds it was reversed. It was stated by Prof. Marks that the plant in question in the case was perhaps the richest gas territory in the world, unless it be in the City of London, and no mains laid less than 8 inches in diameter. Naturally, there would be less hazard under such circumstances, and much less expense in laying and maintaining its mains in proportion to the gas consumed."

And his conclusion he states (transcript, page 73) in the following language:

> "So far as the hazards of the business of complainant are involved in this action are concerned, it is not necessary to discuss them. They are at least as great as in the *Des Moines Water Works Case*, in which this Court during the past year held that the company was entitled to 8 per cent. What the evidence may have been in that case cannot be considered here. *The evidence in this case clearly justifies 8 per cent under the rule established in the Consolidated Gas Case.*"
>
> "* * * It is a matter of common knowledge that the City of New York is the great money center of the United States, and an investment in the city itself, of so large an

amount of capital as invested in the property and business of the Consolidated Gas Company, and its permanency renders it very desirable and would induce the investment of capital therein at a much less rate of return than in the comparatively smaller plant of the Des Moines Gas Company, *and really under the circumstances, 6 per cent. of return therein would be a greater return accordingly than 8 per cent. in the plant and business of the complainant herein.* Permanency is an important element in considering the rate of return."

It is worth while to note the following differences between the conditions in the *Consolidated Gas Company case*, and those in the case at bar:

(a) In the *Consolidated case* the company had a perpetual franchise; the laws of Iowa when this action was brought and now, do not authorize a franchise for more than twenty-five years.

(b) In the *Consolidated case*, the company had a virtual monopoly; here the city of Des Moines has the power to grant a competing franchise at any time.

(c) In the *Consolidated case* the regulation of rates was by a state commission; in this case the power to regulate is in the local city council, with an express statutory provision that it may not fix a schedule of rates for any definite period.

James R. Hanna, the mayor of the city, testified (transcript, page 2825):

"I have always felt as though since most companies were organized on a basis of the

capital stock and the bond issue that among the cost of operation should be included the interest on the bonds, and then such a rate as would make with fair management perhaps 8 per cent. on the capital stock, and with better management what might be called wages of management rather than profit, if you please, *ten to twelve or fifteen per cent.* or any other per cent. good management could procure."

The master found that this plant was well managed. It cannot be contended that the company was not entitled to earn at least 8 per cent.

VIII.

The adjustments made by the master in the operating expenses.

Throughout our argument, we have taken the operating expenses as found by the master. He made substantial reductions from the results attained in actually operating the property. He gave no effect to the evidence showing the probability of substantial increases in them. The testimony upon this question was unusually exhaustive.

Complainant's Exhibit 24 (opposite transcript, page 3466), showed the revenue for the five years 1906, 1907, 1908, 1909 and 1910, and in minute detail, both in dollars and in cents per thousand cubic feet, the operating costs, for this period. The operating costs are analyzed into nearly sixty items, each of which appears for each year in this period.

Complainant's Exhibit 36 (the fourth exhibit after transcript, page 3468) showed from 1887 to 1910 the population, the sales per capita, per meter,

and per mile of main; the revenue per thousand cubic feet; and the cost per thousand cubic feet.

Complainant's Exhibit 93 (transcript, opposite page 3478) showed the operating costs analyzed in detail for the ten months ending October 31, 1911, and the sales and revenue for the same period.

This brought the figures down to the submission to the master, which was in November, 1911.

The master computed the operating costs in cents per thousand cubic feet of gas. This is the method employed in the business, and its use is desirable as it affords a convenient factor which very much shortens the other computations. For instance, the price of gas was $1.00. If the operating expenses and depreciation were say 72 cents, the remainder representing the return is, at this rate, 28 cents, and at the 90 cent rate would be 18 cents, and this, multiplied by the sales, gives the net return in dollars.

We call attention to some of the items in the operating expenses which the master disallowed.

(a) Rate regulation expenses.

The appellant, as a part of its operating expenses, has been in the past compelled to pay the expenses incident to rate regulation. It is required to pay the expenses incident to this rate adjustment, and from time to time will incur such expenses in the future. Because such expenses are inevitable, the appellant claimed that in estimating its future operating expenses, a normal allowance should be made on this account. The master allows nothing on this account.

The master's report (transcript, page 74) shows that in 1910 the expense actually incurred by the

company on this account was $5,935.18, something over 1.05 cents per thousand cubic feet of sales. This item for the first ten months of 1911 (Complainant's Exhibit 93, transcript, opposite page 3478, heading "Expense," sub-heading "Rate Regulation Expense"), amounted to 13.31 cents per thousand cubic feet.

This expense will not be incurred every year, and so it would be obviously unfair to charge it all against one year, but there should be included what would amount to a fair average on this account. The master thought that 2 cents per thousand cubic feet would be a fair amount (transcript, section 3, page 103; page 108, line 28), for this item. He, however, allowed nothing on this account.

Such abnormal expenses, in order to arrive at a fair operating cost, must be taken into account and must be projected over a fair period. This is the rule adopted by the Interstate Commerce Commission in

> *Central Yellow Pine Assoc. vs. Ill. Central Ry. Co. et al.*, 10 I. C. C. Rep. 505-544,

and it seems to have been approved by this Court in the same matter. See

> *Ill. Central Ry. Co. vs. I. C. C.*, 206 U. S. 441,

where the Court says:

> "The Commission finds that the net and gross earnings of the appellant have grown from year to year, and also that what they have reported as operating expenses have also grown. But in these operating expenses there were included 'expenditures for real estate, right of way, tunnels, bridges and other strict-

> ly permanent improvements, and also for equipment, such as locomotives and cars.' The Commission expressed the opinion that such expenditures should not be charged to a single year, but 'should be, so far as practicable' and so far as rates exacted from the public are concerned, 'projected proportionately over the future.' And it was said, 'If these large amounts are deducted from the annual operating expenses reported by the defendants (appellants) it will be found that the percentage of operating expenses to earnings has in some extent diminished and in others increased to no material extent."

This is exactly the principle which the appellant sought to have applied to the case at bar.

(b) Salaries of officers.

The company paid $10,000 a year in the way of salaries to its officers, who were also officers of The United Gas Improvement Company of Philadelphia, which owns the stock of the Des Moines Gas Company. The master takes this up at page 75 of the transcript.

These services included:

(1) General services such as the matters of policy determined by these men as directors, the services of Mr. Douthirt as secretary of the company, the services of Mr. Lillie as its treasurer, the financing of the company, including furnishing new money whenever required for additions and extensions, aid in the present rate controversy, to which its secretary, Mr. Douthirt, had devoted practically a year, and for which assistance has been rendered by the engineering, accounting and

other departments, and generally all executive services, aside from the operation of the plant, so that the energies of the local officers may be devoted solely to developing and carrying on the business along lines fixed for them.

(2) Services of consulting engineers, including examinations of some twenty-six reports as to the business each month, suggestions as to improvements and economies in the management and operation and service; also engineering service in connection with extensions of and additions to the plant, including the determination of what new investments shall be made, what additions to the plant will be necessary and when they will be required, all requisitions going to Mr. Walton Clark and receiving careful consideration in his department, and bearing his recommendation when presented to the board of directors.

(3) Services of the auditing department, including services of the general auditor who examines the accounts every month, and services of traveling auditors who audit the accounts at Des Moines periodically—thus rendering the employment of outside chartered accountants unnecessary.

(4) Services of a purchasing agent whose purchases for the company amount to over $250,000 per annum, rendering the employment of a special purchasing agent for this company unnecessary, and giving it the benefit of advantageous prices, secured through purchases of larger quantities than if made for this plant alone, and through the competent service and experience of a man who specializes in this one thing.

(5) The benefits derived from an experimental plant maintained by the United Gas Improvement Company, but too expensive to be maintained by the Des Moines Gas Company for its own use, in which new processes and apparatus are tried out, and the science and art of manufacturing gas are constantly studied, to the end that new things that are good may be adopted, and that money may not be wasted in new things that are not good.

(6) Furnishing stationery, advertising and other standard supplies to the Des Moines Gas Company at cost, which is low, because of the large quantities obtained for it and numerous other companies, and furnishing to that company apparatus manufactured by the United Gas Improvement Company at the cost of manufacture, without any profit whatever added.

The evidence showed without controversy that the Des Moines Gas Company received the benefit of every special price, special discount or other advantage which the United Gas Improvement Company had in the purchase of anything intended for the Des Moines Gas Company.

The master held that this item should be disallowed upon the ground that there the evidence failed to show that these services were worth $10,000 a year. He disallowed the entire item, notwithstanding the obvious fact that these services were of value. The expenses incident to executive service, engineering service, auditing service, purchasing service, and other matters covered by this item will be incurred in the future because each of these expenses is necessary if the plant is to be well and economically designed, constructed and managed, and is to furnish to the public good service.

(c) The Greater Des Moines Committee subscription.

Various donations were made by the company in connection with its business, which are referred to by the master at paragraph 5, transcript, page 76. They amounted to an average of $2,546.62 a year for five years. The master says (transcript, page 77):

> "In my judgment, no criticism can be made for these expenditures for the past. The Greater Des Moines Committee, as I understand it, is a committee of its citizens for the purpose of 'boosting' the city, and as a matter of course any increase in the business prosperity and population, will result beneficially to the complainant. Its business will at least be affected to some extent, either by the City's prosperity or the lack of it."

He, however, only allows on this account for the future $1,739.78 per annum. Such items do not decrease; they increase.

We submit that the fact that a scrutiny of the operating expenses for five years discloses only what we have referred to as debatable items, is a demonstration that those expenses were conservative, that the expenditure of $10,000 for salaries general was justified by a resulting excellent management, and that there should have been no disallowances.

IX.

What would have been a reasonable operating cost.

We have elsewhere called attention to the fact that the master based his estimates of the future upon the average operating costs for five years, less deductions made by him, the lowest of these five years, and the actual adjusted results in 1910, and in the first ten months of 1911. Upon these bases the highest net revenue per thousand cubic feet was 22.90 cents, and the lowest 20.35 cents. We believe the following considerations demonstrate that this was unreasonably low, so that it could not reasonably be anticipated that operating results as favorable to the appellant as those found by the master would be possible.

Hall, the accountant for the city, after making such deductions as seemed to him proper, found the operating cost for the five years immediately preceding January 1st, 1911, when this ordinance was to become effective, to be 63.34 cents per thousand cubic feet.

To apply these figures to the future, some adjustments were obviously necessary. For instance, taxes increase instead of decreasing. They were for the last year 7.22 cents against an average of 6.78 for the five years. Because it cannot be assumed that they would be less, the difference .44 cents should be added for taxes. The master stated 2 cents as a fair allowance for rate regulation. This also should have been added.

The old ordinance authorized an excess charge of 10 cents per thousand cubic feet to enforce

promp payment of bills. The new ordinance omitted this, and this the chartered accountant for the City testified would involve an additional expense of 5 mills per thousand.

The salary of Mr. Haines, the president, had been increased, and this the master approved. He states that it would add .47 of a cent to the cost of gas.

The master finds that if his valuation is correct, the City would be justified in increasing the assessment for taxation $1,000,000, which would add $22,500 to the taxes (transcript, page 83). No allowance is made on this account, though it would increase the operating costs about 3.7 cents per thousand.

To tabulate the matter, we have then:

	Cents.
Mr. Hall's average operating for five years	63.34
Add for bringing charge for taxes up to the 1910 basis	.44
Add for rate regulation expense	2.00
Add additional cost because no penalty is provided	.50
Add on account of increase in Mr. Haines' salary	.47
Add on account of taxes	3.70
Total without depreciation	70.45
Add for depreciation as allowed by master	6.67
Total	77.12

This would leave as a net return at the 90 cent rate, 12.88 cents per thousand cubic feet as against the assumptions of the master ranging from 20.35

cents to 22.90 cents. Moreover, this does not take into account the probable increase in the price of oil (see testimony of J. A. Pearson, transcript, page 3058), and constantly increasing prices for other materials and for labor.

Upon this basis, taking the sales as estimated by the master, the deficits upon the various valuations for the years 1911, 1912, 1913, and 1914, would upon every hypothesis largely exceed the amount of the net return, and upon what we believe to be the sound hypothesis as to value, would leave the net return at little over one-third of what the appellant is entitled to. We insert a computation:

		(Return 12.88)		
Year	Sales—C. F.	Net Return	Valuations	Deficits
			$2,100,000.00	$ 97,056.96
1911	550,800,000	$70,943.04	2,400,000.00	121,056.96
			2,540,000.00	132,256.96
			2,114,368.80	94,445.50
1912	580,000,000	74,704.00	2,414,368.80	118,445.50
			2,554,368.80	129,645.50
			2,234,125.80	100,806.06
1913	605,000,000	77,924.00	2,534,125.80	124,806.06
			2,674,125.80	136,006.06
			2,407,790.80	110,448.86
1914	638,000,000	82,174.40	2,707,790.80	134,448.86
			2,847,790.80	145,648.86

If anything further is necessary to show that the operating costs adopted by the master are extremely conservative, it may be found in the fact that they, with one exception, are less than the estimate of Professor Marks, the engineer for the

defendant. He states (transcript, page 3600) as the cost of a 1000 feet of gas:

	Cents.	
Cash operating expenses.....	63.33	
Residual depreciation	6.00	
Giving a total of.....	69.33	
This deducted from 90 cents would give as his estimate of the net.....	20.67	per 1000.

XVI.

Some Other Items.

The revenue of the plant was fixed and undisputed. We have considered how the master arrived at his valuation, his depreciation allowance of 6.67 cents, his rate of return, and his basis for operating costs. There remain only the future investments and future sales.

The matter of sales is, we think, absolutely covered in the other division of our brief, page 116, by the diagram showing his estimate as compared with the history of the plant.

As to investment, we call attention to transcript, pages 85 and 86. It appears that the master ascertained from the evidence, the average investment per thousand cubic feet of increased sales in the distribution system alone, for the last year, for the last five years and for fifteen years, and for the first ten of those fifteen years. He then took as his basis for increased sales $2.00 per thousand feet (transcript, page 87), although he recognized the fact that additions would soon have to be made to

parts of the plant other than the distribution system (transcript, page 88).

We have considered each one of the facts which form the basis for the determination whether this rate will afford to the appellant a fair return or not. This consideration has demonstrated that every doubt as to these facts has been resolved against the appellant. Under these circumstances, the appellant is entitled to have the facts accepted as facts clearly and satisfactorily established, and is justified in taking them as the basis for the conclusions which shall determine its rights in the premises.

Respectfully submitted,

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JAMES D.

Supreme Court of the United States.

No. 75.

October Term, 1914.

DES MOINES GAS COMPANY,
Appellant,

vs.

CITY OF DES MOINES, *et al.*,
Appellees.

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF IOWA.

MEMORANDUM FOR APPELLANT.

Nathaniel T. Guernsey,
Solicitor for Appellant.

George H. Carr,
Of Counsel.

No. 75.

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DES MOINES GAS COMPANY,
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Appellees.

MEMORANDUM FOR APPELLANT.

I.

People ex rel. Kings County Lighting Company vs. Willcox.

The opinion of the supreme court of New York in this case was cited by us, pages 21, 22, 53, 83 and 95 of Division I of the brief and argument for appellant, in support of the two propositions that both going value and the cost of removing and replacing paving must be taken into account. After our briefs were prepared, the court of appeals of New York sustained this case upon the question of

going value, but reversed it upon the question of paving (210 N. Y. 479). It is therefore not an authority in favor of the appellant upon the question of paving.

The conclusion of the court of appeals of New York upon the paving question was based upon the assumption that in the *Willcox Case* this court did not hold that this item should be included (210 N. Y. 495). If our analysis of the *Willcox Case*, beginning at page 41, Division I, of appellant's brief, is correct, the court of appeals of New York has misapprehended it.

II.

The rule as to going value is the same in rate cases and condemnation cases.

This proposition is discussed, beginning at page 99, Division I, of appellant's brief. In addition to the authorities there cited, we call attention to the following excerpt from

Reagan vs. Farmers Loan and Trust Company, 154 U. S. 410.

> "The equal protection of the laws—the spirit of common justice—forbids that one class should by law be compelled to suffer loss that others may make gain. If the State were to seek to acquire the title to these roads, under its power of eminent domain, is there any doubt that constitutional provisions would require the payment to the corporation of just compensation, that compensation being the value of the property as it stood in the mar-

kets of the world, and not as prescribed by an act of the Legislature? Is it any less a departure from the obligations of justice to seek to take not the title but the use for the public benefit at less than its market value?"

Note also, in the same connection, what is said by Mr. Justice BREWER on the subject in the decision in

Ames vs. Union Pacific Railway Company, 64 Fed. 176, 178,

as follows:

"Property invested in railroads is as much protected from public appropriation as any other. If taken for public uses, its value must be paid for. Constitutional guaranties, to this extent, are explicit; and in such condemnation proceedings no inquiry is permitted as to how the owners have acquired the property, provided only it be legally held by them. If a farm belongs to an individual, and the public seeks to take it, it must pay its value, and is not permitted to diminish the price by proving the owner acquired the means of purchase by immoral or disreputable practices. He may have made his fortune dealing in slaves, as a lobbyist, or in any other way obnoxious to public condemnation; but, if he has acquired the legal title to the property, he is protected in its possession, and cannot be disturbed until the receipt of its actual cash value. The same rule controls if railroad property is sought to be appropriated. No inquiry is open as to whether the owner has received gifts from State or individuals, or whether he has, as owner, managed the property well or ill, or so as to acquire a large fortune therefrom. It is enough that he owns the property—has the legal title; and, so owning, he must be paid the actual

value of that property. If he has done any wrong in acquiring or using the property, that wrong must be redressed in a direct action therefor, and cannot be made a factor in condemnation proceedings. These propositions in respect to condemnation proceedings are so well settled that no one ever questions them. The same general ideas must enter into and control legislation of the kind before us.

* * * * * *

"* * * Is there not an element of equity which puts the reduction of rates in a different attitude from the absolute taking of the property by virtue of eminent domain? In the latter case, while only the value is paid, yet that value is actually paid, and the owners may reinvest, and take the chances of gain elsewhere, whereas, if the property is not taken, the owners have no other recourse than to receive the sum which the property they must continue to own will earn under the reduced rates."

Respectfully submitted,

NATHANIEL T. GUERNSEY,
Solicitor for Appellant.

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Supreme Court of the United States.

No. 75
OCTOBER TERM, 1913.

DES MOINES GAS COMPANY,
Appellant,

vs.

CITY OF DES MOINES *et al.*

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF IOWA.

REPLY BRIEF FOR APPELLANT.

NATHANIEL T. GUERNSEY,
Solicitor for Appellant.

GEORGE H. CARR,
of Counsel.

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NO. 397.

Supreme Court of the United States,

OCTOBER TERM, 1913.

DES MOINES GAS COMPANY,
Appellant,

against

CITY OF DES MOINES, *et al.*,
Appellees.

REPLY BRIEF OF APPELLANT.

On the last page of division I of appellants' brief, it is stated that the 90 cent rate became effective October 10, 1912. This date is an error; it should have been November 15, 1912.

I.

The facts as found by the master must be accepted, and cannot be questioned by the appellees.

Upon the coming in of the master's report, the appellees filed twelve exceptions (transcript, page 150). These were largely directed to the findings

of the master as to the value of the appellant's property. None of these exceptions were allowed. The appellees took no appeal.

The appellant in its specification of errors relied upon, and in its argument, has accepted the master's findings of fact as to value and has confined its argument to the proper conclusions to be deduced from these facts. In the second division of its brief, attention is called to some of the evidence bearing upon these facts, solely for the purpose of showing that the master's findings were conservative.

The appellant has not asked to have any finding of any fact as to value disturbed. The appellees have not appealed, and therefore they cannot be heard now to question these findings.

See, in this connection,

Chittenden, et al., vs. Brewster, et al., 2 Wallace 191;

Mail Company vs. Flanders, 12 Wallace 130;

Field vs. Barber Asphalt Paving Company, 194 U. S. 618.

In the last case mentioned, the court says, referring to an appellee who has not taken a cross-appeal:

> "If he fails to take such appeal, the correctness of the decision as against him will be presumed."

So far, therefore, as these matters of fact, as distinguished from the conclusions drawn from them by the master and the court below are concerned, there is nothing here for debate.

II.

What we have just said disposes of several of the points urged by counsel.

(a) *Donations and gifts by managing officers.*

See brief of appellees, page 39.

The master takes this up at transcript, page 76, paragraph 5. To his conclusions the appellees filed no exceptions (transcript, pages 150 and 151). It is too late for the appellees to argue this question now.

(b) *Exorbitant salaries.*

See the twelfth point of counsels' argument, page 39.

It will be noticed that counsel refer to the salary question at page 3, and also that they refer at page 77 to an "increase in the salary of the local manager after this case was commenced of nearly fifty (50) per cent," referring to transcript, page 75. At that page of the transcript, the court will find that the master said this as to the salary in question:

> "Jansen Haines had been the general manager of the complainant's works and business at Des Moines since 1903, and has evidently been a very efficient man for the position, and rendered excellent service as such, and no question is made that he has not rendered his employers, as well as the public, satisfactory service. The nature of the business and of the product manufactured demand a man in charge of the works and its business who is an expert gas engineer, as well as a capable business

> man, in order to discharge properly and economically the duties of his position, and a salary of $10,000 per year, in my judgment, is not excessive. There is nothing to indicate that the amount of his salary depends in any way on the result of this action."

Turning again to the exceptions filed by the appellees to the master's report (pages 150 and 151), the court will find that there were no exceptions taken to this conclusion on the part of the master. This question, therefore, is not open for argument here.

(c) *"Return on money in Des Moines."*

Counsel, under this heading, beginning at the bottom of page 51, argue that 8 per cent, which was allowed by the master as a fair return, is excessive. In our opening brief (page 30), we called attention to the master's finding as to fair return, that:

> "The evidence in this case clearly justifies 8 per cent. under the rule established in the *Consolidated Gas* case" and that "really under the circumstances 6 per cent. of return therein *would be a greater return* accordingly than 8 per cent. in the plan and business of the complainant herein" (transcript, page 73).

The appellees excepted to this (see their twelfth exception, page 151), but have not appealed. The court below did not sustain this exception. The appellees cannot re-argue here, without an appeal, the question made by this exception.

(d) *Overhead charges.*

Counsel refer to this at page 66 of their brief. What these charges were and the way the master

dealt with them is shown clearly in the tenth division of his report (transcript, page 54). Here the appellees filed an exception (see transcript, page 150, fifth exception). This was not allowed by the court, and cannot be argued here.

The statement on page 66 that the appellant withheld information from the master as to this matter is entirely without support in the record. On the contrary, the record shows affirmatively that the appellant voluntarily afforded to the appellees every opportunity to examine its books and records.

(e) *Working capital.*

Counsel refer to this at page 67 of their brief. They excepted to the master's report upon this question. (See their ninth exception, transcript, page 151.) This exception was not allowed, and the appellees cannot argue the question here.

This limits the argument to the questions of law involved in connection with the items of going value and appreciation on account of paving, and to the conclusions which may be deduced from the facts found by the master.

III.

The item of going value.

We discussed this, commencing at page 67 of division I of the brief for appellant. Counsel for the city discuss it commencing at page 57 of their brief.

Counsel are not consistent in their use of the term "going value." They sometimes adopt its ac-

cepted meaning, which is the element representing the difference between the value of a property such as this, with its developed business and organization, as a going concern, and what would be the value of the same physical property completed and tested, ready for operation, but without a developed business or earning capacity. When they use the term in this sense, their contention is that this item should not be taken into account in a case such as this.

More frequently, they use this term as representing the difference between the value of the parts going to make up the physical property before they are connected and put in a condition to operate, that is, an incomplete physical plant, and the value of the same parts connected up so as to make a single operating whole, but without any developed business. So far as we know, there is no authority for the use of this term in this sense.

It is clear that a completed physical property, without organization or business, is worth more than what would be the value of its disconnected parts. It is equally clear that a gas plant such as the one under consideration here, with a completed organization and a developed business, is worth more than what would be the value of the same physical property ready to operate, but without any business or organization.

The real question here should not be obscured by any difference in definitions. Our contention is that the value to be ascertained in this case is the value of the property as it actually existed, characterized by its developed business. The contention of the appellees is that what should be ascertained is the value of something that does not exist, namely, the same physical property, ready to op-

erate, but without the value which belongs to it because it is in fact in operation and a going concern.

That we have correctly stated counsels' position is, we think, made clear by the following excerpts from their brief. They say, on page 59, commencing with the extract from the *Omaha Water Company* case:

> "That there is a difference between even the cost of duplication less depreciation of the elements making up the Water Company plant and the *commercial value of the business as a going concern is evident.*"
>
> * * * * * *
>
> "What does Justice Lurton mean by this part of his opinion? Is it not simply that duplication less depreciation would cover not only the value of the 'bare bones' of the physical property but in addition the *so-called going value* that follows the connecting up of the separate parts and making it a part of a completed working machine, *but would not cover the commercial value of the business that follows and results from the operation of the machine;* or *to put it as he does, the value of the business as a going concern.*
>
> Borrowing a term, 'Obviously' the statement of Justice Lurton in referring to the *Knoxville* and *Wilcox cases* that both cases were rate cases meant that in such cases *the value of the business as a going concern* as distinguished from the value of the plant as a connected and completed whole *was not to be considered in rate cases,* any other interpretation would involve the intelligence of the court."

Again counsel say, on page 60:

> "* * * and as to the element of going value that attaches and inheres in the physi-

cal property because of *its being connected up* and made a part of a completed workable whole *ready to take care of the business* as fast as it comes that value is included in the base figures of all the witnesses as to the valuation of the physical property.

* * * * * *

"In fact, the difference between the *scrap value* of most of this property and the value placed upon it by the witnesses represents the value that attaches and inheres in the property because it is connected up and as a live operating machine.

It is only necessary to refer to the 24-inch pipe under the Des Moines river. If that pipe were disconnected from the Des Moines Gas plant and was not bearing a part of the burden of the completed machine what would be its value? Could anybody be found anywhere that would pay the expense of removing it for the pipe?"

Putting it baldly, what they call going value is represented by the difference between an uncompleted plant and one completed and ready for operation, but not in fact doing business. Carried to its logical conclusion, upon their theory, this element of value should include the entire expense incident to building the plant after the materials have been purchased.

(a) *The sense in which the term "going value" is used in the authorities.*

Commencing at page 76 of division I of appellant's brief, we have cited a large number of cases which hold that in ascertaining the value of a property of this kind, going value must be taken into account. The force of these authorities depends

upon the sense in which this term is used. Without exception they use it to characterize the element of value due to an established business.

The leading case is

National Water Works Company vs. Kansas City, 62 Fed., 853,

cited at page 76 of division I of appellant's brief. The first sentence in the excerpt there made is:

> "Nor would the mere *cost of reproducing* the water works plant be a fair test, because that does not take into account the value which flows from the established connections between the pipes and the buildings of the city."

Justice BREWER proceeds:

> "It is obvious that the mere cost of purchasing the land, constructing the buildings, putting in the machinery, and laying the pipes in the streets—in other words, the cost of reproduction—does not give the value of the property as it is to-day."

The claim of counsel is the direct converse of this proposition.

The next sentence is:

> "A completed system of water works, such as the company has, without a single connection between the pipes in the streets and the buildings of the city, would be a property of much less value than that system connected, as it is, with so many buildings, and earning in consequence thereof, the money which it does earn."

This is directly opposed to the claim that going value does not mean the added value of the physical property due to its developed business.

The next sentence is as follows:

> "The fact that it is a system in operation, not only with a capacity to supply the city, but *actually supplying* many buildings in the city —not only with a capacity to earn, but actually earning—makes it true that 'the fair and equitable value' is something in excess of the cost of reproduction."

Counsel would stop with the "capacity to supply the city." The plant in the case at bar was actually supplying the city and was actually earning. Counsel would allow merely the value of a system which might be made to earn.

Justice Brewer says:

> "It should pay therefor not merely the *value of a system which might be made to earn,* but that of a system which does earn."

The term is used in the same sense by Mr. Justice Lurton in the *Omaha Water Company* case, in the statement quoted by counsel (page 59, brief for appellees). The expression is used in the same sense in

> *Public Service Gas Company vs. Board of Public Utility Commissioners, et al.* (not yet officially reported), 87 Atl., 651,

referred to at page 79 of division I of appellant's brief. The court says that "for going value, or *cost of developing the business,* $1,025,000 was allowed."

The proper use of this expression is shown by the following extract from

> *Appleton Water Works Co. vs. Railroad Commission of Wisconsin*, 142 N. W., 476 (not yet officially reported),

cited at page 84 of division I of appellant's brief:

> "The term 'going value' is somewhat vague, and is a comparatively recent addition to the terminology of the subject. It is not the value of the franchise, and it is not the good will of the business; certainly it cannot be the latter in the case of a monopoly like the present. It has been variously spoken of as the 'difference between a dead plant and a live one' (*Omaha vs. Omaha Water Co.*, 218 U. S., 180), or 'the element of value which comes from the fact that the property is sold as a going concern' (*Gloucester W. S. Co. vs. Gloucester,* 179 Mass., 365, 60 N. E., 977); 'the added value because of the company's being a going concern' (Commissioner Roemer in his testimony in the present case)."

The case of

> *Gloucester Water Company vs. City of Gloucester,* 179 Mass., 365,

cited in appellant's brief, division I, page 86, describes this element of value in the same way. It says:

> "It is plain that the real, commercial, market value of the property of the water company, is, or may be, in fact, greater than 'the cost of reproduction, less depreciation, of the different features of the physical plant.' Take, for example, a manufacturing plant: suppose a manufacturing plant has been established for some ten years and is doing a good business and is sold as a going concern; it will sell for more on the market than a *similar plant reproduced physically would sell for immediately on its completion, before it had acquired any business.*"

In the *City of Norwich* case (appellant's brief, division I, page 87) the same element of value is considered. The court says:

> "It was also proper for the commission to pay regard to the fact that the plaintiff has an established business, built up after experiments and changes during a long period."

It was the same element that it was held must be taken into account in another rate case,

> *Bombright et al. vs. Geary, et al.*, 210 Fed., 44,

cited in appellant's brief, division I, page 89, where the court says:

> "The courts recognize a difference between the value of a plant of this character, without customers or business, and a plant that has been fully established and connected up with a municipal lighting system and with the houses, business places, and factories of regular customers."

The same factor was involved in

> *Spring Valley Water Works vs. City and County of San Francisco*, 124 Fed., 574,

another rate case, where it is said (appellant's brief, division I, page 89):

> "The complainant next contends that it has an established business as a water company and as a going concern in supplying water to consumers, and that its plant has a value by reason of these advantages beyond the mere cost of reproducing the plant."

A later rate case between the same parties, referred to at page 90, division I, of appellant's brief, describes this element in the same way. It says:

"It also appears to be the law that whatever discoverable value may attach to the concern as a going business is proper to be considered in determining the value of complainant's plant for rate-fixing purposes."

In

Kennebec Water District vs. City of Waterville, 97 Me., 185,

cited in division I of the appellant's brief, page 91, it was held that in estimating even the structure value, allowance must be made for the fact that

"the water system is a going concern, with a profitable business * * * already established and with a present income assured and now being earned."

The case of

Venner vs. Urbana Water Co., 174 Fed., 348,

cited in division I, appellant's brief, page 93, quotes as the definition of going value which it held must be allowed in a rate case, part of what we have quoted from the *National Water Works Company* case.

In the third *Spring Valley Waterworks* case (192 Fed. 137), cited in division I of appellant's brief, page 94, the expression is used in the same sense.

In

People ex rel. Kings County Lighting Co. vs. Willcox, et al., 156 App. Div. (N. Y.) 603, 141 N. Y. S. 677,

(division I of appellant's brief, page 95), the expression is used in the same sense.

The term "going value" in the authorities is uniformly used to indicate the element in the value of the property due to the fact that the physical property is characterized by an established, developed business. It is never used in the sense in which counsel use it, namely, to designate the difference between the value of a completed physical structure and the value of its unconnected parts.

The authorities therefore are uniform in their holding that this is an element in the value of this property.

(b) *The same rule must apply in both rate cases and condemnation cases.*

This question is argued at page 99, division I. of appellant's brief.

The cases cited in division I of appellant's brief upon the question of going value, include condemnation cases and rate cases, the rate cases being

Public Service Gas Company vs. Board of Public Utility Commissioners, et al. (not yet officially reported), 87 Atl. 651;

People ex rel. Kings County Lighting Company vs. Willcox, et al., 156 App. Div. (N. Y.) 603; 141 N. Y. Supp. 677;

Bonbright, et al., vs. Geary, et al., 210 Fed. 44;

Spring Valley Water Works vs. City and County of San Francisco, 124 Fed. 574;

Spring Valley Water Company vs. City and County of San Francisco, et al., 165 Fed. 667;

Venner vs. Urbana Water Co., 174 Fed. 348;
Spring Valley Waterworks vs. City and County of San Francisco, 192 Fed. 137.

The whole matter is summed up in a few sentences by the supreme court of New York in the *Kings County Lighting Company* case, as follows:

> "I am unable to perceive a logical difference between allowing 'going value' in the valuation of a plant when it is to be taken entirely by the public and allowing the same element when valuing the same plant for rate making purposes. In each case the thing to be done is the fair appraisement of present value. What difference in principle can there be because in one instance all is taken for the use of the public and in the other the public limits the earnings?"

(c) *An additional decision.*

The *Kings County Lighting Company* case was appealed from the supreme court of New York to the court of appeals, which in an opinion filed March 24, 1914 (which has not yet been reported), affirmed the supreme court in its holding that going value must be taken into account in a rate case. Evidently the argument was made there that no allowance should be made in excess of the mere cost of reproducing the physical property as distinguished from the cost of developing the business. The court says:

> "The valuation of the physical property was determined by ascertaining the cost of reproduction less accrued depreciation. Preliminary and development expenses prior to operation were included, but no allowance was made for the cost of developing the business. By that method, the plant was valued in a sense

> as a 'going concern.' *In other words 'scrap' values were not taken; but to say that that sufficiently* allows for 'going value' is the same as to say that 'going value' is not to be taken into account."

The court says further:

> "It would have been entitled to a return on the valuation adopted by the commission, *if it had no customers, but was just ready to begin business,* whereas it had a plant in operation with an established business, which every one knows takes time, labor and money to build up."

This directly negatives the contention which counsel make here.

The court of appeals commences its opinion with this statement:

> "It is now *generally recognized* that 'going value,' as distinct from 'good will,' is to be considered in valuing the property of a public service corporation either for the purpose of condemnation or rate making, but there is a wide divergence of view as to how it is to be considered."

In sustaining the supreme court in its conclusion that no distinction can be made between rate cases and condemnation cases, it says:

> "The opinion of Mr. Justice Clarke below saves me the necessity of citing and analyzing the cases bearing on the first branch of the question. We concur fully in what he has said on the subject and in his conclusion that there is no 'logical difference between allowing "going value" in the valuation of a plant when it is to be taken entirely by the public, and allowing the same element when valuing the same plant for rate making purposes.' A case since decided should

be added to the rate cases cited by him in which 'going value' has been allowed, *i. e., Public Service Gas Co. vs. Board of Commissioners* (87 Atl. Rep. (N. J.) 651).

It is no answer to say that in condemnation cases the exchange value is taken, and that that depends on the rates charged, the thing to be determined in rate cases. Of course, a rule of valuation might be adopted in a condemnation case which would not work in a rate case; but if the cost of reproduction less depreciation rule be adopted, as appears to have been done in *National Waterworks Company vs. Kansas City* (62 Fed. Rep. 853) and *City of Omaha vs. Omaha Water Company* (218 U. S. 180), the leading condemnation cases in the Federal courts in which 'going value' was considered, it is impossible to see why the 'going value' could not be determined in both classes of cases in precisely the same way.

The difficulty of determining the 'going value' will not justify the disregarding of it. Rate making is difficult. But that will not justify confiscation. The difficulty, however, will lessen, as it does in most cases, when we cease to think about the subject vaguely."

The court says further:

> "The company starts out with the 'bare bones' of the plant, to borrow Mr. Justice Lurton's phrase in the *Omaha Water Works Case* (*supra*). By the expenditure of time, labor and money, it co-ordinates those bones into an efficient working organism and acquires a paying business. The proper and reasonable cost of doing that, whether included in operating expenses or not, is as much a part of the investment of the company as the cost of the physical property."

The opinion of the court of appeals just referred to has not yet been reported. We file a copy of it with this brief.

(d) *The item of $300,000, which is in controversy, was for going value.*

The master used this term properly. He says on page 63 of the transcript:

> "The evidence followed strictly might require me to make it higher, could my mind rest satisfied that the 'Going Value' of this concern is worth more, but I cannot feel satisfied that such is the case, and regard $300,000 as every dollar it is worth *over and above its physical value*, and in my judgment, it is worth that much more than a plant would be *that had to develop its business.* * * * I think a purchaser would be willing to add this amount *for its developed business*, and that a seller would not be willing to sell unless he got that much more than its physical value."

At the bottom of this page, he says that good will is not included. He further says (transcript, page 109):

> "The opinion in the recent case of the *Cedar Rapids Gas Co. vs. Cedar Rapids*, adds additional emphasis thereto. Not only so, but it also renders it extremely doubtful that 'Going Value' will be included in the valuation of such a plant as the basis of return, beyond the fact that it is in 'successful operation.' *That would exclude the sum of $300,000 estimated in this case on the grounds that when the ordinance was enacted, it already possessed a well developed and paying business.*
>
> In my judgment, after considering the able and thorough arguments of Counsel, that it is decisive of the question, and holds that '*Going Value' should not be considered in determining the basis* upon which the Complainant is entitled to have its return reckoned, and feel that it is my duty to so state."

He follows this with the statement quoted by counsel that this would decrease each of this estimated annual deficits $24,000. He found that the appellant was entitled to earn at least 8 per cent. as a fair return, and this $24,000 is just 8 per cent. of this item of $300,000.

What the master disallowed, therefore, was the element in the value of this property due to the fact that it was a going concern with a developed business.

(e) *This is an element in the value of the physical property.*

In the *Omaha* case the appraisers separated this item, which was in dispute there as well as here. In that case, this court said:

> "This separation of *an element contributing to the value of each tangible part* was done because required to be done under an order made in the circuit court in a suit in which the water board of the city of Omaha was complainant and the members of the board of appraisers and the water company were defendants."

In the *Kennebec Water District* case (division I of appellant's brief, page 91), this element of value is referred to as an element in the structure value.

In the *Spring Valley Waterworks* case, reported 192 Fed., 137, the court quotes another statement of the Maine court from the *Brunswick Water District* case to the same effect. We insert the quotation:

> "We speak sometimes of a going concern value as if it is or could be separate and distinct from structure value—so much for structure and so much for going concern. But this

> is not an accurate statement. The going concern part of it has no existence, except as a characteristic of the structure. If no structures, no going concern. If a structure in use, it is a structure whose value is affected by the fact that it is in use. There is only one value. It is the value of the structure as being used. That is all there is to it."

This element of value is something which inheres in the physical property. The customers of a gas property are tied to it by the connections. They go with the property. Any valuation of the physical property which does not include this factor is not a full valuation of the physical property.

IV.

The authorities cited by counsel upon the question of going value.

In support of their contention, counsel cite, at page 26 of their brief,

> *Cedar Rapids Water Company vs. Cedar Rapids*, 118 Iowa, 258.

This case also holds that the depreciation necessary to maintain the property is not a proper charge against operating expenses, but that it must be paid out of net earnings.

In the later case of

> *Cedar Rapids Gas Light Company vs. Cedar Rapids*, 144 Iowa, 426,

the supreme court of Iowa abandoned its earlier position as to both of these items. (See the dis-

cussion of this case in division I, appellant's argument, page 69.)

It was not the decisions of the Iowa court, but the opinion of this court in this same case which the master felt compelled him to disallow this item after he had first allowed it. (Transcript, top page 109.)

The *Omaha Water Company* case is also relied upon by counsel in this connection. What that case decided was that going value was an element which contributed "to the value of each tangible part" of the property, and that it must be considered in a condemnation case. The case was not a rate case and did not involve and could not decide the question whether going value should be taken into account in a rate controversy.

The master's finding, confirmed by the court below, and not brought in question by either party here, is that the actual value of this property, excluding paving, was $2,400,000; that if it could be divested of its business, what would remain would be worth $2,100,000. The sole question here is, May the city confiscate one-eighth of the value of this property through rates which will not permit it to earn a return upon more than $2,100,000? If it can, then the property is only worth $2,100,000, because it is not worth to its present owner or to any purchaser more than the amount upon which, at reasonable rates and under normal conditions, it will earn a fair return.

V.

Appreciation on account of paving.

Counsel consider this question commencing at page 53 of their brief. It is discussed in division I of appellant's brief, page 37.

Among the cases we cited upon this question was the *Kings County Lighting* case, decided by the supreme court of New York. The court of appeals of New York has, since our brief was written, reversed the supreme court upon this question, and held that paving should not be allowed. In its discussion of the matter, the court of appeals says:

> "The Appellate Division felt bound by the decision of the United States Circuit Court in the *Consolidated Gas Case* (157 Fed. Rep. 849), and it is true that such an allowance was made in that case. But the United States Supreme Court held in that case (212 U. S. 19) that the rate established was not confiscatory, and did not pass on the propriety of that allowance. What was said in the opinion on the subject of present value was merely a general statement having no necessary relation to the question now under consideration."

Our discussion of the *Consolidated* case, commencing at page 41, division I, of appellant's brief, we think demonstrates that the court of appeals of New York was under a misapprehension in its statement that this court did not pass upon this question in the *Willcox* case.

Whatever confusion there is as to this question is due to a failure to distinguish between cost and value. The argument in the case at bar is the ar-

gument that was made in the *Willcox* case. It was there claimed that the *cost* of these mains should determine their present value; that original conditions instead of conditions existing at the date of the valuation should control.

If the criterion is cost and not value, then this item of $140,000, where the company did not actually incur the cost incident to removing and replacing the pavements, should be disallowed. If the criterion is value, the item should be allowed, because value must be determined by the conditions existing at the date of the valuation and not by those existing at the time the mains were laid.

VI.

"Duty of the Council."

At page 42 of their argument, under the heading which we have quoted, counsel attempt to excuse the fact that the council enacted the ordinance in question without consideration. Upon the issues as they appear here, this can hardly be a material question. The appellant has not questioned the existence of a presumption in favor of the reasonableness of these rates. The court below said as to this matter (transcript, page 162):

> "I deem it appropriate to call attention to another phase of this litigation. The ordinance was adopted within a few minutes from its introduction. Quite likely it had been considered by the members in their individual capacities. But in open session it received but little consideration, and without the presence of anyone for the Gas Company. And every

> member voting to reduce the earnings had a direct personal and moneyed interest in thus reducing the rates. If a judge were to so act, his acts would be absolutely void, because of the long time maxim 'No man can be judge in his own cause.'"

The ordinance in controversy was passed December 27, 1910. Counsel refer on page 43, to a return for taxation made *in February, 1908*, nearly three years prior to the enactment of this ordinance, in which they say that the value of the physical property of the gas company was stated at $1,002,020. They omit to call attention to complainant's exhibit 45, a similar return made *in 1909*, giving the value of the property at $2,192,400 and to a similar return made in March, *1910*, nine months before the enactment of the ordinance and the bringing of this suit, giving the value of the property at $2,230,400, and to a similar return made in *1911*, the first return made after the property had been inventoried and appraised, giving its value as $3,381,000. (See complainant's Exhibits 45, 46 and 47, among the exhibits following transcript, page 3470.)

If the council did in fact, when making rates at the end of 1910, "rely upon the valuation of the property as stated by these gentlemen at that time" (1908), this under the circumstances, would rather tend to discredit them.

Counsel, on page 45, refer to what Mr. Hall, found from the books to be the investment. Mr. Hall was an accountant, pure and simple. He says (transcript, page 2184) that he has not the remotest idea as to the value of this plant. What he found on the books was $1,727,675.67. Counsel omit to state that this included nothing on account

of engineering, contingencies, interest during construction, discount on bonds or any other overhead charge, or on account of paving over mains, working capital, going value or appreciation in real estate.

Taking for these various items, the figures found by the master, simply because they are lower than the estimates of the complainant's witnesses, we have

Books	$1,727,675.67	
Overhead charges, 15% of $1,975,026 (transcript, pages 57, 54).	295,254.00	
Paving, not including what master disallowed (transcript, page 61	160,043.00	
Working capital, allowed by master (transcript, page 60).....	140,000.00	
Going value, allowed by master (transcript, page 63	300,000.00	
Appreciation in real estate, ($150,000; transcript, page 60, minus $35,964)	114,036.00	$2,737,008.67
Deduct depreciation, found by master (transcript, page 59)		333,878.00
		$2,403,130.67

The master's valuation, including going value, and the paving item above, was $2,400,000.

The master discusses investment, commencing at page 64 of the transcript, and states at the top of page 66 that the book figures contain no overhead charges, and finally that "there is no greater difference than might be expected, in view of the times covering the investment."

In view of the fact that the testimony as to this investment was not given until months after the council had enacted this ordinance, it could hardly have been influenced by this factor in making the rates.

VII.

The computation of counsel beginning at the bottom of page 45.

Counsel state on page 46, that it will be at once suggested that their method is unfair. We prefer to characterize it as unsound, making the conclusions reached by them untrustworthy.

Of course, the fundamental fallacy is obvious. Counsel take estimated sales for 1911 in excess of the sales for any preceding year. They then take what they call "average operating expenses" for three years, *and take this in dollars,* not in cents per 1000 c. f. of gas.

Since the sales for each of these three years were less than the estimated sales for 1911, there would be an increase in the operating expenses on account of the increase in sales, so that the average operating expenses for this period would be much less than the operating expenses for 1911, even if there were no change in conditions except in the volume of sales.

Mr. Hall, the accountant for the city, found from the books that the average operating costs for five years prior to December 31, 1910, were, not including depreciation, 63.34 cents per 1000 c. f. (transcript, page 3616, last column). To this there should be added the master's allowance for depreciation of 6.67 cents (transcript, page 59). The master found that the sales for 1911, taking actual sales for ten months and estimating only the months of November and December, would be 557,778,529 (Tr. p. 99). Applying these figures, which include Valley Junction, we have, using round figures,

Revenue, 558,000,000 cubic feet, at 90 cents.	$502,200.00
Operating expenses, at 63.34 cents plus 6.67 cents, equals 70.01 cents per thousand cubic feet.	390,600.00
	$111,600.00

What counsel have done is to inflate the volume of sales and contract the operating expenses. Of course, profits may be indefinitely enlarged by this process.

The master's computation for this same year, shown at page 99 of the transcript, based on a lower operating cost than the average for the preceding five years, shows a deficit of $73,031.84.

VIII.

The presumption in favor of rates fixed by the City Council.

We are at a loss to understand the reference by counsel to an alleged effort on our part to show that there was no presumption in favor of the rates fixed by this ordinance. We conceded the contrary in section 2, paragraph (e) of our brief (appellants' brief, division I, page 19). We did not assert this proposition, and did not cite upon it any of the cases which counsel discuss.

IX.

A fair return on money in Des Moines.

There are two statements upon page 52 of the appellees' brief upon this subject that are open to misconstruction. It is said that there was testimony "that stock in gas and other public utility companies *earning* 6 per cent, were quoted on the market at par and over." There was no evidence in the record as to the *earnings* upon any stock in any public utility except what might be inferred from the testimony in this case as to the Des Moines Gas Company.

In the report of Professor Bemis, who the master found was not a competent witness (transcript, page 67) there was a statement as to statements by others (transcript, page 3739) as to dividends paid on stocks of some companies in Massachusetts, New York, Chicago, and St. Louis, and the dividends paid by the United Gas Improvement Company.

Everybody who has had any business experience knows that the value of a stock is not affected so much by the dividend which it pays, as by the amount of property which it represents and the amount of its earnings in excess of the portion of them distributed in the way of dividends.

It is said by counsel on the same page, that "no evidence whatever was offered by the appellants showing what return was being received on money invested in public utilities in Des Moines." Literally this is true, aside from the evidence produced

in the present case. It omits to state, l
that there was a large amount of evidenc
duced showing what return would be nece
secure money for such investments in Des
and that no evidence was offered by the a
to contradict it.

A summary of the testimony upon this
is as follows:

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is question

Counsel cite various cases in which different rates of return have been discussed. Their references to these cases are inaccurate. It was not decided in the *Lincoln* case that 5.2 per cent. is compensatory, or in the *Knoxville* case that 4% would be reasonable; but it is unnecessary to discuss these matters because what is a reasonable rate is a question of fact to be determined by the evidence in the particular case.

X.

The last Point of counsel.

Under the heading "In Conclusion," counsel discuss several matters. They say in the first place, that the valuation of $2,100,000 fixed by Judge McPherson upon the property "is from $300,000 to $500,000 higher than the estimate of any of the city's witnesses." This statement is not supported by the record.

As we have seen, Bemis was held an incompetent witness. Hall, the accountant, did not attempt to testify as to value. He says (transcript, page 2184):

> "Q. Have you any idea of what the value of this property is?
> A. None.
> Q. Not the remotest?
> A. Not the very slightest."

The only other witness is Marks. The master says that Marks made his total unit cost $1,865,340 (transcript, page 66). The statement of the items there shows that this does not include going

value or working capital. Moreover, the unit cost adopted by the master is, as shown on the same page, $1,975,020. The difference, $109,680, represents the real difference between the valuation of the master and that of Marks. These are the base figures, to each of which the same additional amounts would have to be applied.

The statement of counsel, therefore, would have been more accurate if it had been that the valuation adopted by the master was about $100,000 more than that fixed by the single witness upon this subject for the appellees.

Counsels' statements as to investment are not supported by any reference to the record or by the record itself. The facts as to the investment in the property are shown in the master's report (transcript, page 64).

Page 68 of appellees' brief contains the statement that the master found that gas could be made in the future for less than 60 cents. The master referred to this as a possibility. There was nothing to indicate that there would be any reduction in the cost of making gas in the near future.

The statement as to the evidence of the witnesses Lea and Baehr on the same page, is misleading. Each of them in connection with his estimate upon going value, estimated the cost of operating the plant in question for each year up to and including the year 1917. This was for the purpose of comparison with the hypothetical plant, and inasmuch as the taxes and depreciation would be the same in each instance, they were not included.

These operating costs as to the witness Baehr are shown in the table opposite page 3414 of the transcript, where it is stated that they do not include

taxes and depreciation, and as to the witness Lea, are shown in the second table after page 3328 of the transcript, where an inspection of the items included shows that taxes and depreciation were omitted.

These operating costs as given by Lea and Baehr for the respective years, not including taxes and depreciation, were, in cents, as follows:

	1911	1912	1913	1914	1915	1916	1917
Lea	59.82	58.65	57.67	56.56	55.63	54.71	53.96
Baehr	58.33	58.99	59.74	59.47	59.31	59.13	58.96

It appears that Baehr's figures are higher than those of Lea in every year except the first one, so that we shall ignore Mr. Baehr.

The following table shows these operating costs of the witness Lea with the taxes and depreciation added. The figure taken for taxes is the figure for the year 1910, because taxes do not decrease, and the figure taken for depreciation is the figure adopted by the master.

	1911	1912	1913	1914	1915	1916	1917
Lea	59.82	58.65	57.67	56.56	55.63	54.71	53.96
Taxes	7.22	7.22	7.22	7.22	7.22	7.22	7.22
Depreciation,	6.67	6.67	6.67	6.67	6.67	6.67	6.67
	73.71	72.54	71.56	70.45	69.52	68.60	67.85

If these figures be adopted, the remaining profit per thousand cubic feet, making the deductions from a 90 cent rate, would be as follows for the respective years:—

1911	1912	1913	1914	1915	1916	1917
90.00	90.00	90.00	90.00	90.00	90.00	90.00
73.71	72.54	71.56	70.45	69.52	68.60	67.85
16.29	17.46	18.44	19.55	20.48	21.40	22.15

If Lea's figures were adopted the deficits would be much increased. The highest net rate of return here is 22.15 cents per thousand cubic feet. The highest rate used by the master in making his computations showing his deficits exceeds this and is 22.90 cents. The lowest rate here is 16.29 cents. The lowest rate used by the master is 20.35 cents. This testimony does not support the inference that the cost could be reduced below 60 cents.

It is true that the master said that if there were an increase of sales to the present consumers, the profit *as to this increase* would be doubled, but the master found that increased sales must be due to increased population (appellants' brief, division I, page 121) and this counsel does not answer.

The burden of this division of counsel's argument is the proposition that it has not been clearly shown that these rates will not yield a fair return. Let us see what the assumptions are that must be indulged in order to raise this doubt.

(a) It must be assumed that the plant can be operated for substantially less than any actual results ever attained by it.

(b) It must be assumed that a reduction of 10 cents a thousand will result in absolutely

unprecedented increases in sales, notwithstanding the fact that such reductions in the past have not produced substantial increases. (See column "Sales per meter", appellant's argument, division I, page 119, and the first column in the same table.)

(c) At the existing sales on a valuation of $2,400,000 it must be assumed that there will be increased sales amounting to 356,897,900 c. f. (division I, appellant's argument, page 117), whereas the highest increase in any year since 1895, notwithstanding reductions of rates, was 57,417,000.

(d) It must be assumed that a population of 92,000 people would consume gas sufficient to supply a population of over 150,000 people. (Division I, appellant's brief, page 126).

(e) It must be assumed that this plant, with a capacity to manufacture annually about 600,000,000 cubic feet, will manufacture and sell from one-third to one-half in excess of its capacity. (Division I, appellant's brief, page 126).

The question is whether it is reasonable to indulge in these assumptions. We submit that it is absolutely unreasonable, and that the effect of these facts cannot be obviated by general statements as to the obligation to establish the facts by clear and satisfactory evidence.

The facts here are established by clear and satisfactory evidence, and there is no dispute as to them. The reasonable conclusions to which these facts lead may not be overthrown by pure speculation.

One further suggestion in this connection. We submit that the question is whether or not the rates would afford a fair return when they were to become effective; it is not whether at some time in the future they may afford a fair return. There is nothing in the law which would protect the appellant in working this matter out upon a doctrine of averages. If it may be required to operate for a series of years at a loss, it would require operation for a like series of years at more than a reasonable return to make the appellant whole; but if the appellant should ever earn more than a reasonable return, the city could immediately reduce rates. The result would be less than a fair return; and the deficit would be increased, if each time the rates were revised, the company could be required to begin with less than a fair return, on the theory that later the loss might be recouped.

We respectfully submit that the case should be reversed, and that the appellant is entitled to a decree upon the merits, or in any event, to such a decree as will afford it an opportunity to demonstrate by experiment the insufficiency of these rates.

NATHANIEL T. GUERNSEY,
Solicitor for Appellant.

GEORGE H. CARR,
Of Counsel.

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Supreme Court of the United States

No. 397.

DES MOINES GAS COMPANY,
Appellant,
vs.
CITY OF DES MOINES, *et al.*,
Appellees.

Appeal from the District Court of the United States for the Southern District of Iowa.

BRIEF AND ARGUMENT FOR APPELLEES.

STATEMENT.

On December 27, 1910, the appellee city adopted an ordinance, providing among other things, that:

> "From and after the 1st day of January, A. D. 1911, the rate to be charged and collected for gas by any person, firm or corporation supplying or distributing gas to the City of Des Moines, or its inhabitants, is hereby fixed as follows, to-wit: Ninety (90) cents for each thousand cubic feet." (Tr., p. 113).

On December 29, 1910, the appellant filed its bill herein alleging and charging among other things, as follows:

> "Your orator further alleges that said pretended ordinance fixing a 90c rate is unreasonable to the

extent that its enforcement will amount to the taking of complainant's property for public use without just compensation and that it will operate as confiscation of the property of complainant. That the enforcement of said ordinance will deprive complainant of its property without due process of law and will deny to complainant equal protection of the law. Its enforcement would impair the existing contract between complainant and defendant city and between plaintiff and the State of Iowa, growing out of plaintiff's incorporation under the statute of the State of Iowa and of the ordinances of the City of Des Moines, giving the right to complainant to lay its mains and supply gas to the residents of the said city.

Your orator further alleges, that unless defendants are restrained by the orders of this court, that they will enforce the provisions of the said pretended ordinance and will prevent complainant from charging or receiving in excess of ninety cents per thousand cubic feet for gas sold and distributed." (Tr., p. 6).

It was also alleged in the bill that the present value of the Gas Company's property exceeded the sum of $2,700,000, and that during a three year period preceding the adoption of the ninety cent ordinance appellant had received as interest and profits upon the valuation of its property from net earnings but 5.15 per cent annually, (Tr., pp. 2, 3, 4, 5 and 6), and on the 31st day of December, 1910, a temporary restraining order was granted and issued by his Honor, Judge Smith McPherson, enjoining the enforcement of the ninety cent ordinance and the application for injunction set down for hearing on the 6th day of January, 1911, upon three days' notice.

On the 6th day of January, 1911, the bill was amended in which amendment the value of the property of the

Gas Company was alleged to be $4,092,000 instead of $2,700,000 as stated in the original bill, and interest and profits 2.56 per cent instead of 5.15 per cent as originally alleged. (Tr., pp. 10-11).

To the bill as amended the appellee City demurred. The demurrer was on the 6th day of January, 1911, overruled, the restraining order theretofore granted continued in full force and effect, the appellees given until the first day of February, 1911, to answer, and appellant five days thereafter within which to plead thereto; and it was ordered that the cause be referred to a Special Master to take the evidence, report findings of fact and conclusions of law, the taking of testimony to begin on the 1st day of March, 1911, the Master's report to be filed prior to the 1st day of the May, 1911, session of the court. (Tr., p. 17).

Answer and replication were filed within the time allowed.

On the 16th day of May, 1911, an order was entered herein appointing Robert Sloan, Esq., Special Master in Chancery, whereupon an order was made by the Special Master setting the matter down for hearing at the United States court room at Des Moines, Iowa, commencing on the 12th day of July, A. D. 1911, at which time the taking of testimony was begun and continued from day to day until the 29th day of November, 1911, at which time the arguments of counsel on both sides were completed and the case finally submitted to the Master.

On the hearing it developed that the appellant Company was owned and controlled by the United Gas Improvement Company of Philadelphia; that the local manager, Mr. Jansen Haines just shortly before the commencement of the taking of testimony was elected president of the local company, and his salary increased from $7,500 to $10,000, or nearly fifty per cent. In addi-

tion to Mr. Haines salary $10,000 was being allowed certain officers of the United Gas Improvement Company for alleged services rendered the local company. It also developed that at about 1906 there was a re-organization of the old Capital City Gas Light Company, its property being taken over by the appellant company, the transaction being carried on between the Capital City Gas Light Company and a clerk from the office of the United Gas Improvement Company of Philadelphia.

On the 5th day of April, 1912, the report of the Special Master in Chancery was filed herein in which among other things the Master found:

First. That the value of the appellant's physical property was in round numbers $2,100,000.

Second. That the going value of the plant was $300,000; (this item, however, was not allowed as a separate item but was included in the $2,100,000).

Third. That in determining the value of the property $140,000, being the cost of taking up and replacing mains where none existed when the mains were laid, is deducted from the Master's reproduction cost of the distribution system; or in other words, nothing was allowed for this item in determining the value of appellant's plant.

Fourth. That eight (8) per cent on appellant's investment would not be an unreasonable return.

Fifth. With economy and care the cost of manufacturing and distributing gas might be reduced below sixty (60) cents.

Sixth. That an increase of sales to existing customers would practically double the profits per m c f on the increase.

Seventh. That should both the item of $140,000 for paving and $300,000 going value be added to the $2,100,000 valuation of the physical property as found by

the Master, a decree for the appellant would be imperative.

Eighth. That since the Master's finding of $2,100,000 as the value of appellant's physical property is reckoned upon the fact that the plant was in successful operation, all going value is included in this valuation.

To the report of the Master both parties filed exceptions; the appellant claiming that the Master's valuation of its property was too low and that both the item of $300,000 as going value and $140,000 the estimated cost of cutting through and replacing pavement over pipe which was laid before the pavement was constructed should be added to the value of the physical property as found by the Master; the appellee contending that the value found and fixed by the Master was too high, and that an item of $140,000 as working capital should not have been allowed and included in the physical valuation of the Gas Company's property.

There were other objections and exceptions urged, but the above in a general way covers the important questions raised on the Master's report.

On the 21st day of August, 1912, the Hon. Smith McPherson, Judge, filed his opinion on the exceptions taken to the Master's report, overruling all of the exceptions, and on the same day entered a decree dismissing appellant's bill with prejudice and at its cost, vacating the restraining order and temporary injunction theretofore issued, such vacation to be effectual at the end of sixty (60) days. The decree also provided that at any time after three years appellant, its successors or assigns, might on motion re-instate this case with all the pleadings and evidence now on file with the same and like effect as though filed for such subsequent hearing, with the right to each party to file additional pleadings and take such additional evidence as might be deemed ad-

visable, and supersedeas bond in the penalty of $5,000 was provided for.

This decree was later, on the application of the appellant, modified so that the vacation of the restraining order and temporary injunction was postponed and was to become effective on the 15th day of November, 1912, and it was further provided in the modified decree as follows:

> 6. "It is further decreed that the orders heretofore made as to refund of ten (10) cents per thousand feet of gas in excess of the rate fixed by the ordinance herein in controversy be superseded, provided the complainant file a bond for that purpose in the penal sum of One Hundred and Fifty Thousand ($150,000) Dollars, properly conditioned with ample surety, to be approved by this court or a judge thereof.
>
> 7. "Any other supersedeas than those provided for in paragraphs 5 and 6 of this decree is denied and shall only be allowed by the Supreme Court of the United States or a justice thereof.
>
> 8. "In the event an appeal is not taken, perfected and filed within sixty (60) days of the date hereof, or if said appeal is taken and this decree should be affirmed as to said refund as set forth in paragraph 6 of this decree, then the city and all parties claiming such refunds shall present such claims to this court within such time as will be hereafter fixed for allowance. And said city and all defendants and the officers and agents of such city and all persons are prohibited from presenting or urging the same in any other court than this court. And for such hearings this court retains jurisdiction over the parties and the subject matters. Each party excepts to all the foregoing insofar as adverse."

From this decree and judgment the cause was brought to this court on appeal.

BRIEF.

POINT I.

That the appelle city had ample power to pass the ordinance regulating the rates to be charged and which are complained of by the appellant is beyond dispute.

> "They shall have power to require every individual or private corporation operating such works or plant, subject to reasonable rules and regulations, to furnish any person applying therefor, along the line of its pipes, mains, wires, or other conduits, with gas, water, light or power, and to supply said city or town with water for fire protection, and with gas, water, light, or power for other necessary public purposes, and to regulate and fix the rent or rate for water, gas, light or power; to regulate and fix the rents or rates of water, gas and electric light or power; to regulate and fix the charges for water meters, gas meters, electric light or power meters, or other device or means necessary for determining the consumption of water, gas, electric light or power, and these powers shall not be abridged by ordinance, resolution or contract."
>
> *Code Section 725.*

II.

Nor is it any longer a matter or dispute that the legislature has power to provide for the regulation of rates charged for public service.

Munn vs. Illinois, 94 U. S., 113;

Budd vs. New York, 143 U. S., 517;

Cedar Rapids Water Co. vs. Cedar Rapids, 118 Iowa, 258;

Cedar Rapids Gas Light Co. vs. City of Cedar Rapids, 120 N. W., 966.

III.

The rate or price fixed by the City Council that may be charged for public service is presumed to be reasonable, and the court is limited in its inquiry in passing upon a rate thus fixed to the question as to whether or not the rate is confiscatory.

Cedar Rapids Water Co. vs. Cedar Rapids, supra, at page 259-260, it is said:

> "The right to regulate is not unlimited, and, if the schedule be made so low that its adoption will operate as a confiscation of the water company's property without due process of law, the courts will interfere to prevent its enforcement. *Turnpike Co. vs. Sandford,* 164 U. S., 578 (17 Sup. Ct. Rep. 198, 41 L. Ed. 560); *Reagan vs. Trust Co.,* 154 U. S. 362 (14 Sup. Ct. Rep. 1047, 38 L. Ed. 1014); *Railroad Commission Cases,* 116 U. S., 307 (6 Sup. Ct. Rep. 334, 29 L. Ed. 636); *San Diego Land and Town Co. vs. National City,* 19 Sup. Ct. Rep. 810 (174 U. S. 739, 43 L. Ed. 1154). But the conclusion that a schedule of rates duly adopted by proper authority will have such destructive effect is not to be lightly assumed, nor found from doubtful or uncertain premises. It is said by our highest judicial authority that 'the judiciary ought not to interfere with the collection of rates established under legislative sanction, unless they are so plainly and palpably unreasonable as to make their enforcement equivalent to the taking of property for public use without such compensation as, under all the circumstances, is just to both the owner and the public; that is, judicial interference should never occur unless the case presents clearly and beyond all doubt such a flagrant attack upon the rights of property under the guise of regulation as to compel the court to say that the rates prescribed will necessarily have the effect to deny just compensation for private property taken for public use.'"

In *Cedar Rapids Gas Light Co. vs. City of Cedar Rapids, et al., supra,* at page 968, the court says:

> "The power of the municipality to regulate the rates to be charged for gas, save that these may not be so reduced as to deny to the company a fair return upon the property used in the service of the public, is not questioned. The sole inquiry is whether the ordinance, if enforced, will operate to deprive the company of fair compensation for the services to be rendered. The act of the municipality, in fixing rates, is purely legislative, and, as it is by virtue of authority given by the legislature, is presumed to have been in the proper exercise of the power conferred. *Mayor and Aldermen of the City of Knoxville vs. Knoxville Water Co.,* 212 U. S., 1, (29 Sup. Ct. 148, 53 L. Ed.). For this reason the rate established by the ordinance assailed is presumed to be reasonable, and this court, in inquiring whether this is true in fact, can only declare it otherwise upon finding that it is so low that its adoption will operate as a confiscation of plaintiff's property without due process of law."

In *San Diego Land & Town Co. vs. Jasper,* 189 U. S., 441; Justice Holmes, speaking for the court, says:

> "In a case like this we do not feel bound to reexamine and weigh all the evidence, although we have done so, or to proceed according to our independent opinion as to what was proper rates. It is enough if we cannot say that it was impossible for a fair-minded board to come to the result which was reached."

In *Cumberland Telephone & Telegraph Co. vs. City of Louisville,* 187 Fed. 637, at page 641, the court says:

> "In *Knoxville vs. Water Company,* 212 U. S., at page 17, 29 Sup. Ct. at page 153 (53 L. Ed. 371), it was said: 'It cannot be doubted that in a clear case of confiscation it is the right and duty of the court to annul the law. Thus in *Reagan vs. Farmers'*

Loan & Trust Co., 154 U. S., 362 (14 Sup. Ct. 1047, 38 L. Ed. 1014), where the property was worth more than its capitalization, and upon the admitted facts the rates prescribed would not pay one-half the interest on the bonded debt; in *Covington, etc., Turnpike Co. vs. Sandford*, 164 U. S., 578 (17 Sup. Ct. 198, 41 L. Ed. 560), where the rates prescribed would not even pay operating expenses; in *Smyth vs. Ames*, 169 U. S., 466 (18 Sup. Ct. 418, 42 L. Ed. 819), where the rates prescribed left substantially nothing over operating expenses and cost of service * * *injunctions were severally sustained.' But on page 16, 212 U. S., on page 153, 29 Sup. Ct. (53 L. Ed. 371) of the report of the same case the court has said: 'If a company of this kind chooses to decline to observe an ordinance of this nature and prefers rather to go into court with the claim that the ordinance is unconstitutional, it must be prepared to show to the satisfaction of the court that the ordinance would necessarily be so confiscatory in its effect as to violate the Constitution of the United States."

In *San Diego Land & Town Co. vs. National City*, 174 U. S., 739, at page 753, it is said:

"There is no ground to say that the appellant did not in fact have or was denied an opportunity to be heard upon the question of rates. On the contrary, it appears in evidence that the subject of rates was considered in conferences between the local authorities and the officers of the appellant. Those officers may not have been present at the final meeting of the city board when the ordinance complained of was passed. They were not entitled, of right, to be present at that particular meeting. They were heard, and there is nothing to justify the conclusion that the case of the appellant was not fully considered before the ordinance was passed."

Smith vs. Ames, 169 U. S., 466.

In *Stanislaus County vs. Joaquin Irrigation Co.,* 192 U. S., 201, at page 216, the court states:

> "Much of the capital was invested between twenty and thirty years ago, and to be able still to realize 6 per cent upon the money originally invested is more than most people are able to accomplish in any ordinary investment, and more than is necessary in order to give just compensation for property at the time it is used for the public purpose originally intended."

San Diego W. Co. vs. City of San Diego, Cal., 50 Pac., 633; 62 Amr. Rep. 297, (note).

Knoxville vs. Knoxville Water Co., 212 U. S., 1, where the court says:

> "There can be at this day no doubt, on the one hand, that the courts, on constitutional grounds, may exercise the power of refusing to enforce legislation, nor, on the other hand, that that power ought to be exercised only in the clearest cases. The constitutional invalidity should be manifest, and where that invalidity rests upon disputed questions of fact, the invalidating facts must be proved to the satisfaction of the court. In view of the character of the judicial power invoked in such cases it is not tolerable that its exercise should rest securely upon the findings of a master, even though they be confirmed by the trial court. The power is best safeguarded against abuse by preserving to this court complete freedom in dealing with the facts of each case. Nothing less than this is demanded by the respect due from the judicial to the legislative authority. It must not be understood that the findings of a master, confirmed by the trial court, are without weight, or that they will not, as a practical question, be regarded as conclusive. All that is intended to be said is, that in cases of this character this

court will not fetter its discretion or judgment by any artificial rules as to the weight of the master's findings, however useful and well settled these rules may be in ordinary litigation. We approach the discussion of the facts in this spirit."

* * * * * * * * * *

"In ordinary cases full justice would be done by reversing the decree and remanding the cause for further proceedings in the court below, there to undergo a new and doubtless prolonged investigation. It is more than seven years since the enactment of the ordinance, and it has never been observed in any respect. This litigation ought now to be ended, if it is possible to end it with due regard to the rights of the contending parties. Disregarding for the moment all the errors which were committed in the court below, the decision of this cause may be rested upon a broader ground, which is clearly indicated by the previous judgments of this court. The jurisdiction which is invoked here ought, as has been said, to be exercised only in the clearest cases. If a company of this kind chooses to decline to observe an ordinance of this nature, and prefers rather to go into court with the claim that the ordinance is unconstitutional, it must be prepared to show to the satisfaction of the court that the ordinance would necessarily be so confiscatory in its effect as to violate the Constitution of the United States. In *Ex Parte Young,* 209 U. S., 123, 52 L. Ed. 714, 13 L. R. A. (N. S.) 932, 28 Sup. Ct. Rep, 441, the last word of caution by this court was said (p. 166): 'Finally it is objected that the necessary result of upholding this suit in the circuit court will be to draw to the lower Federal courts a great flood of litigation of this character, where one Federal Judge would have it in his power to enjoin proceedings by state officials to enforce the legislative acts of the state, either by criminal or civil actions. To this it may be answered, in the first place, that no injunction ought

to be granted unless in a case reasonably free from doubt. We think such rule is, and will be, followed by all the judges of the Federal courts.' The same thought in effect, was expressed in *San Diego Land & Town Co. vs. National City,* 174 U. S., 739, 754, 43 L. Ed., 1154, 1160, 19 Sup. Ct. Rep. 804, 810: 'Judicial interefernce should never occur unless the case presents clearly and beyond all doubt such a flagrant attack upon the rights of property under the guise of regulations as to compel the court to say that the rates prescribed will necessarily have the effect to deny just compensation for private property taken for the public use.' And in *San Diego Land & Town Co. vs. Jasper,* 189 U. S., 439, 47 L. Ed. 892, 23 Sup. Ct. Rep. 571, after repeating with approval this language, it was said (p. 441): 'In a case like this we do not feel bound to re-examine and weigh all the evidence, although we have done so, or to proceed according to our independent opinion as to what were proper rates. It is enough if we cannot say that it was impossible for a fairminded board to come to the result which was reached.'

"It cannot be doubted that, in a clear case of confiscation, it is the right and duty of the court to annul the law. Thus, in *Reagan vs. Farmers' Loan & T. Co.,* 154 U. S., 362, 38 L. Ed. 1014, 4 Inters. Com. Rep. 560, 14 Sup. Ct. Rep. 1047, where the property was worth more than its capitalization, and upon the admitted facts, the rates prescribed would not pay one-half the interest on the bonded debt; in *Covington & L. Turnp. Road Co. vs. Sandford,* 164 U. S., 578, 41 L. Ed. 560, 17 Sup. Ct. Rep. 198, where the rates prescribed would not even pay operating expenses; in *Smyth vs. Ames,* 169 U. S., 466, 42 L. Ed. 819, 18 Sup. Ct. Rep. 418, where the rates prescribed left substantially nothing over operating expenses and cost of service; and in *Ex Parte Young, supra,* where on the aspect of the case which was before the court, it was not disputed that the rates prescribed were in fact confiscatory, injunctions were severally sustained. But the case before

us is not a case of this kind. Upon any aspect of the evidence the company is certain to obtain a substantial net revenue under the operation of the ordinance. The net income, in any event, would be substantially 6 per cent, or 4 per cent after an allowance of 2 per cent for depreciation. See *Stanislaus County vs. San Joaquin & K. River Canal & Irrigation Co.*, 192 U. S., 201, 48 L. Ed. 406, 24 Sup. Ct. Rep. 241. We cannot know clearly that the revenue would not exceed that return. We do not feel called upon to determine whether a demonstrated reduction of income to that point would or would not amount to confiscation. Where the case rests, as it does here, not upon observation of the actual operation under the ordinance, but upon speculations as to its effects based upon the operations of a prior fiscal year, we will not guess whether the substantial return certain to be earned would lack something of the return which would save the effect of the ordinance from confiscation. It is enough that the whole case leaves us in great doubt. The valuation of the property was an estimate and is greatly disputed. The expense account was not agreed upon. The ordinance had not actually been put into operation; the inferences were based upon the operations of the preceding year; and the conclusion of the court below rested upon that most unsatisfactory evidence, the testimony of expert witnesses employed by the parties. The city authorities acted in good faith, and they tried, without success, to obtain from the company a statement of its property, capitalization, and earnings.

"The courts, in clear cases, ought not to hesitate to arrest the operation of a confiscatory law, but they ought to refrain from interfering in cases of any other kind."

In *Wilcox vs. Consolidated Gas Co.*, 212 U. S., 19, the court says:

"The question arising is as to the validity of the acts limiting the rates for gas to the prices therein stated. The rule by which to determine the question is pretty well established in this court. *The rates must be plainly unreasonable to the extent that their enforcement would be equivalent to the taking of property for public use without such compensation as, under the circumstances, is just both to the owner and the public.*"

In *Railroad Commission of Louisiana vs. Cumberland Telephone & Telegraph Company*, 212 U. S., 414, it is stated:

"The presumption in favor of the correctness of telephone rates established by a state commission obtains, although the data upon which the commission acted may have been insufficient, so long as the rates adopted were not based entirely upon arbitrary conjecture."

Lincoln Gas & Electric Co. vs. City of Lincoln, 182 Fed., 926.

Des Moines Water Co. vs. City of Des Moines, 192 ~~206~~ Fed., ~~637~~. 193.

Shepherd vs. Northern Pac., 184 Fed., 765.

IV.

The burden being upon the appellant to establish every fact necessary to a finding that the rate fixed if put in operation would result in confiscation before the court would be justified in holding the ordinance in question invalid because confiscatory and in violation of the Constitution the proof, like in cases of fraud or mistake in the execution of instruments, must be clear, convincing and satisfactory.

Bouvier defines "clear" to mean: "free from indistinctness or uncertainty, easily understood, plain."

The same author defines "satisfactory evidence" to be:

> "That which is sufficient to induce a belief that the thing is true."

"Satisfactory evidence" is defined in *Words and Phrases,* as:

> "Satisfactory evidence which is sometimes called sufficient evidence, means that amount of proof which ordinarily satisfies an unprejudiced mind beyond a reasonable doubt." Citing—
>
> *Thayer vs. Boyle,* 30 Me., 475-481;
>
> *West vs. West,* 90 Iowa 41; 57 N. W., 639;
>
> *White vs. C. M. & St. Paul Ry. Co.,* 47 N. W., 146.

Richmond S. D. R. Co. vs. Trummel, 53 Fed. 196, in this case the court quotes from 1st Greenleaf on Evidence, section 2, as follows:

> "By satisfactory evidence, which is sometimes called sufficient evidence, is intended that amount of proof which ordinarily satisfies an unprejudiced mind beyond reasonable doubt, the circumstances which will amount to this degree of proof can never be previously defined, the only legal test of which they are susceptibe is their sufficiency to satisfy the mind and conscience of a common man, and so to convince him that he would venture to act upon that conviction in matters of the highest concern and importance to his own interest."
>
> 2 Starkie, Ev. 512.

"Satisfactory or sufficient evidence is that amount or weight of evidence which is adapted to convince a reasonable mind."

U. S. vs. Lee Uuen, 118 Fed., 442-457.

Webster defines the word "satisfy" to mean:

"Giving or producing satisfaction, especially relieving the mind from doubt or uncertainty and enabling it to rest with confidence."

Cadman vs. Peters, 118 U. S., 73.

Lalone vs. U. S., 164 U. S., 255, where the court says:

"In all proceedings instituted to recover moneys or to set aside and annul deeds or contracts or other instruments in writing on the ground of alleged fraud the rule is of long standing and is of universal application that the evidence tending to prove fraud and upon which to found a decree must be *clear* and *satisfactory*. A mere preponderance of evidence, which at the same time is vague or ambiguous, is not sufficient to warrant a finding of fraud. * * * The trial court * * * only went so far as to say that on the whole it was satisfied that the government had a *preponderance* of evidence that the pension was obtained fraudulently, etc. This mere preponderance is not sufficient in such a case."

Howland vs. Blake, 97 U. S., 624, where it is said:

"The burden rests upon the moving party of overcoming the strong presumption arising from the terms of a written instrument. If the proofs are doubtful and unsatisfactory, if there is a failure to overcome this presumption by testimony entirely plain and convincing beyond reasonable controversy the writing will be held to express correctly the in-

tention of the parties. A judgment of the court, a deliberate deed of writing, are of too much solemnity to be brushed away by loose and inconclusive evidence, (citing Story's Eq. Jurisp. 152). In this case the evidence falls far short of affording this satisfactory conviction. It it not necessary to say that the complainant's claim is not made out, or that such claim is overthrown by the evidence of the defendants. We are all, however, of the opinion that the presumption of the deeds is not overcome by satisfactory and convincing proofs. * * * There is undoubtedly evidence produced by the complainant to sustain his claim; but after a careful perusal of it, we are by no means satisfied that it is of the character and extent required by the principles above laid down."

In *United States vs. American Bell Telephone Co.*, 167 U. S., 223, where Justice Brewer, speaking for the court, says:

> "When it is proposed to set aside, to annul, or to correct a written instrument for fraud or mistake in the execution of the instrument itself, the testimony on which this is done must be *clear, unequivocal, and convincing, and that it cannot be done upon a bare preponderance of evidence* which leaves the issue in doubt. If the proposition thus laid down in the cases cited, is sound in regard to the ordinary contracts of private individuals, how much more should it be observed where the attempt is to annul the grants, the patents, and other solemn evidences of title emanating from the government of the United States under its official seal."

In the Knoxville water case Justice Moody in the opinion, says:

> "There can be at this day no doubt on the one hand that the courts on constitutional ground may exercise the power of refusing to enforce legislation,

nor on the other hand, that that power ought to be exercised only in the *clearest* cases. The constitutional invalidity should be manifest and where that invalidity rests upon disputed questions of fact the invalidating facts must be proved to the *satisfaction* of the court."

Again he says:

"The jurisdiction which is invoked here ought, as has been said, to be exercised only in the *clearest* cases."

Knoxville vs. Knoxville Water Co., supra.

In *San Diego Land & Town Company vs. National City*, the court lays down the rule thus:

"Judicial interference should never occur unless the case presents *clearly and beyond all doubt* such a flagrant attack upon the rights of property under the guide of regulations as to compel the court to say that the rates prescribed will necessarily have the effect to deny just compensation for private property taken for the public use."

In *Wilcox vs. Consolidated Gas Company*, Justice Peckham, at page 41, says:

"The case must be a *clear* one before the courts ought to be asked to interfere with state legislation upon the subject of rates, especially before there has been any actual experience of the practical result of such rates."

Wilcox vs. Consolidated Gas Co., supra;

Corbitt vs. Smith, 7 Iowa, 60;

Langer vs. Merservey, 80 Iowa, 158;

Gardner vs. Weston, 18 Iowa, 535;

McMillan vs. Bissell, 63 Mich., 66; 29 N. W., 737;

Sloan vs. Baker, 34 Minn., 491; 26 N. W., 730;

Milner vs. Hess, 47 Ill., 170;

Kent vs. Lasley, 24 Wis., 654;

Henry vs. Hotaling, 41 Cal., 422;

Bigler vs. Jack, 114 Iowa, 667;

Betts vs. Betts, 132 Iowa, 72;

Bradford vs. Helsell, 130 N. W., 908.

In the Betts case Justice Weaver lays down what may be said to be the established rule in this state, when he says:

> "To deprive a deed which is absolute in form of its character as a full and effective conveyance, and to convert it into a security requires something more than a doubtful showing or an uncertain preponderance of the evidence. We must start with the presumption that the instrument is what it purports to be; and although the presumption is not conclusive, it is to be overcome only by *proof* which is reasonably *clear* and *satisfactory.*"

Betts vs. Betts, supra.

In the Bradford case, Justice Sherwin says:

> "A deed purporting to convey absolute title will not be held to be a mortgage only unless the evidence is so *clear and satisfactory as to leave no doubt* that the real intention of the parties was to execute a mortgage."

Bradford vs. Helsell, supra.

The sum of all of which is that in both State and Federal courts to establish a fact by proof that is clear, satisfactory and convincing means nothing more nor less than that the proof must be free from doubt, or in other words, that in cases such as we have here the complainant is bound to put the question of the confiscatory effect of the ordinance beyond all reasonable doubt.

V.

Even if it should be found that the ordinance in question fixes the rate so low that it will return to the appellant company only the lowest current rate of interest, the rate should not be held to be unreasonable.

San Diego W. Co. vs. City of San Diego, supra;

People vs. Budd, 117 N. Y., 125; 15 Amr. St. Rep., 640; 22 N. E., 670;

Covington vs. Farmer, etc., 154 U. S., 412;

Turnpike Co. vs. Sandford, 164 U. S., 578; at pages 591-595;

Fairhaven & W. R. Co. vs. New Haven, 203 U. S., 379.

In *Cedar Rapids Water Company vs. Cedar Rapids, supra*, the court says:

> "We shall not attempt to go into any minute statement or analysis of the figures and computations relied upon by counsel. Some of the items by which plaintiff increases the alleged value of the works and reduces the showing of net earnings, as well as other items by which the defendant decreases the former and increases the latter, we think are unwarranted. The testimony, when taken as a whole, and considered in the light of all the proved and admitted circumstances, indicates the present fair value of the company's property to be some-

where from $400,000 to $500,000. The total earnings of the works, as charged upon plaintiff's books, for the year preceding the trial in the district court, were, in round numbers, $59,000, subject, however, to some discounts for advance payments. Of this income about one-third is charged to the city, and is not affected by the ordinance in controversy. The other two-thirds are collected from private consumers, and the charges for such service are reduced by the ordinance in varying proportions. Just the extent which this reduction will affect the company's earnings it is impossible to prove or predict with certainty, but we see no reason to believe that the total revenue, after making all due allowance for discounts, will be reduced below $50,000. The operating expenses charged for the year preceding the trial (being largely in excess of the average in its experience) were $23,000, or, including taxes, $28,000. On this basis the net earnings are five and one-half per cent on a valuation of $400,000 or four and two-fifths per cent on a valuation of $500,000, or six and one-half per cent on the total amount of capital stock and bonds. Stated otherwise, this will enable the company to pay its interest charge of $7,500, make a dividend of five per cent on its capital stock (including stock issued as dividends), and leave a margin of over $3,000 for contingencies. This estimate of earnings may be very materially reduced, or the estimate of the value of the plant may be very materially increased, before the court will be justified in saying that the plaintiff's property is being exposed to destruction or confiscation by an unprofitable schedule of rates."

In *Cedar Rapids Gas Light Co. vs. City of Cedar Rapids, supra,* Judge Ladd, speaking for the court, says:

"The expense involved in the manufacture and sale of gas in 1907, including depreciation then, was $70,217.54. This deducted from the probable receipts leaves a net profit for the year of $22,553.56.

This is $1,153.56 above 8 per cent on the cost as alleged by the company. It is $1,553.36 in excess of 7 per cent if the plant be estimated at the valuation of $300,000, or a like sum above 6 per cent if it is worth $350,000. If to these several margins be added the difference in the rates mentioned and that paid on the $75,000 of bonded indebtedness, the first of these will be increased by $2,250, the second by $1,500, and the third by $750. In other words, if the interest on the money borrowed be deducted from the profits, there will remain $18,803.56 net income realized on a net investment of $192,500 or on a net value of $225,000 to $275,000 or a return of 7 or 8 per cent per annum on the value of the plant over the incumbrance. It may be that the margin is not large in view of the contingency of increased cost of collections and the risks incident to all enterprises of this kind, but we are not fixing the rates. This is purely a legislative function. The court's duty ends when it has found that the rates are not so low as to be clearly confiscatory in character.

* * * * * * * * *

"What compensation will be reasonable is a question of fact to be determined in the light of the evidence in each particular case. No court of last resort has undertaken to say what per cent on the value such an investment should yield its owners in all cases. In *Cedar Rapids Water Co. vs. Cedar Rapids,* 118 Iowa, 234-263; 91 N. W., 1081-1091, the court said: 'The net earnings upon this showing, if not large are substantial. The court cannot undertake to guarantee the company any fixed or certain return upon its investment. The exercise of such a power would work an utter destruction of the legislative right to regulate rates of water companies and other corporations operating works of public utility. We think the decisions have already gone to the verge of safety in nullifying legislative acts of this character; and to go farther, and say that

the courts will not only preserve property from confiscation and destruction by legislative power, but will also assure to its owners a definite and fixed rate of profit upon their investment, would be an act of judicial usurpation.' In that case the value of the plant was estimated from $400,000 to $500,000, and rates yielding an income of 5½ per cent on the former sum or 4½ per cent on the latter were held not to be confiscatory; the court remarking that the 'estimate of earnings may be very materially reduced, or the estimate of the value of the plant be very materially increased before the court will be justified in saying that plaintiff's property is being exposed to destruction or confiscation by an unprofitable schedule of rates.' In *Mayor, etc., of City of Knoxville vs. Knoxville Water Co.*, 212 U. S., 1, 29, Sup. Ct. 148, 53 L. Ed.—, the court, after reviewing former opinions, concluded that: 'Under any aspect of the evidence the company is certain to obtain a substantial net revenue under the operation of the ordinance. The net income, in any event, would be substantially 6 per cent, or 4 per cent after an allowance of 2 per cent for depreciation. See *Stanislaus County vs. San Joaquin, etc., Irrigation Co.*, 192 U. S., 201, 24 Sup. Ct. 241, 48 L. Ed. 406. We cannot know clearly that the revenue would not much exceed that return. We do not feel called upon to determine whether a demonstrated reduction of income to that point would or would not amount to confiscation. Where the rate rests, as it does here, not upon observation of the actual operation under the ordinance, but upon speculation as to its effect, based upon the operations of a prior fiscal year, we will not guess whether the substantial return certain to be earned would lack something of the return which would save the effect of the ordinance from consideration. It is enough that the whole case leaves us in grave doubt.' In *Stanislaus County vs. Irrigation Company*, cited, it was remarked concerning an irrigation canal that: 'Much of the capital was invested between 20 and

30 years ago, and to be able still to realize 6 per cent upon the money originally invested is more than most people are able to accomplish in an ordinary investment and more than is necessary in order to give just compensation for property at the time it is used for the public purpose originally intended.' In *Wilson vs. Consolidated Gas Company,* 212 U. S., 19, 29 Sup. Ct., 192, 53 L. Ed. ——, the court, after observing that 'there is no particular rate of compensation which must in all cases and in all parts of the country be regarded as sufficient for capital invested,' concurred in the finding of the trial court, that, in view of the facts proven, 'complainant is entitled to 6 per cent on the fair value of its property devoted to public use.' ''

Lincoln Gas & Electric Co. vs. City of Lincoln, supra:

In this case it was held that 5.2 per cent return would prevent the finding that the rate was confiscatory.

Shepherd vs. Northern Pacific, 184 Fed., 765; it is here held by Judge Sanborn that railroad companies operating in Minnesota and the Northwest subject to all the hazards of fire, wind and flood, failure of crops, financial panics, strikes of organized labor, and sharp competition, 7 per cent is a fair rate.

In Knoxville Water case, above referred to, 4 per cent after an allowance of 2 per cent for depreciation, would save the ordinance from being held void and confiscatory.

In *Stanislaus County vs. Irrigation Co., supra,* 6 per cent was held to be a fair rate.

In *Cumberland Tel. & Tel. Company vs. City of Louisville, supra,* after citing numerous hazards, a return of 7 per cent is held to be sufficient to avoid the charge of confiscation.

And in this same case on appeal to the Supreme Court

of the United States under the title, *City of Louisville, Applnt., vs. Cumberland Tel. & Tel. Co.,* the court declines to hold that to reduce the Telephone Company's return to 6 per cent would or would not be confiscatory.

In *St. Louis & S. F. R. Co. vs. Hadley,* 155 Fed., 220, Judge McPherson says 6 per cent return is sufficient.

In *Louisville & N. R. Co. vs. Siler, et al.,* 186 Fed., 176, at page 189, the court says:

> "What may be a reasonable rate or return, as a matter of legal policy, having due regard to encouraging the investment of capital in railroad enterprises is one question; but when the inquiry becomes a judicial problem, to be considered as involving the taking or not taking of the railroad's property, it is essentially a different question. The lawmakers, dealing with the legislative problem, might think that in successful business years a maximum return, for example, of 10 per cent upon the investment would be reasonable. The courts, dealing with the judicial problem, are affected by locality and attending risks and circumstances involved in the particular case, and apparently insist only upon a *minimum return* to the owner of property devoted to public use which will be reasonable (say, for example, 6 per cent) upon the properly computed investment. An illustration of this rule may be found in the announcement made by Justice Peckham in *Wilcox vs. Consolidated Gas Co.,* 212 U. S., 19-20, 29, Sup. Ct., 192, 53 L. Ed., 382."

VI.

In finding the value of appellant's plant upon which it is entitled to earn a fair return, the going value, franchise or good will is not to be considered.

Cedar Rapids Water Co. vs. Cedar Rapids, supra, at page 262, it is said:

"It is proper here to say that in reaching these conclusions we have not attempted any estimate of 'going value' of the water works as a distinct and severable item in the calculation. By 'going value' we understand is meant that value which arises from having an established 'going' business. While not the exact equivalent of 'good will' as applied to ordinary business, it is of a somewhat similar nature, and attaches to the business, rather than to the property employed in such business. The fact that the business is established is, of course, a material fact in ascertaining the value of the plant, and especially is this true where the property is being estimated for the purpose of sale or condemnation; but as a basis for estimating profits its significance is less apparent. The merchant who sells an established business may properly place a high value on the good will which he relinquishes to the buyer; but so long as he continues in the enjoyment of the business he has created he does not add the value of the good will to his capital stock in estimating the percentage of his annual profits. So, also, we may say we see no reason why plaintiff, in addition to operating expenses, repairs and other ordinary charges, should be allowed to reduce the apparent profits by deductions for a restoration or rebuilding fund. The setting aside of such a fund may be good business policy, and if the company sees fit to devote a portion of its profits to that purpose (though, as we understand the record, no such fund has yet been created), no one can complain; but it is in no sense a charge affecting the net earnings of the works. To hold otherwise is to say that the public must not only pay the reasonable and fair value of the services rendered, but must, in addition, pay the company the full value of its works every forty years—the average period estimated by plaintiff—for all time to come. We have pursued this subject far enough to demonstrate that, even taking the high estimate of value which plaintiff places upon its property, and its own showing of earnings, there

is nothing in the ordinance sought to be nullified which calls for judicial interference. The net earnings upon this showing, if not large, are substantial. The court cannot undertake to guarantee the company any fixed or certain return upon its investment. The exercise of such a power would work an utter destruction of the legislative right to regulate rates of water companies and other corporations operating works of public utility. We think the decisions have already gone to the verge of safety in nullifying legislative acts of this character; and to go farther, and say that the courts will not only preserve property from confiscation and destruction by legislative power, but will also assure to its owners a definite and fixed rate of profit upon their investment, would be an act of judicial usurpation."

Lincoln Gas & Electric Co. vs. City of Lincoln, supra.

In *Cumberland Telephone & Telegraph Co. vs. City of Louisville*, 187 Fed., 637, at page 647, the court says:

"The finding of the Master as to present value of the plant is the subject of many exceptions by both parties, and before we proceed to the consideration of the question upon the testimony of the witnesses, (which at least appears to be the best way to get at it) we may notice those exceptions of the complainant which call in question the accuracy of his conclusions in excluding several items from his estimate. Those items were: First, what are called 'overhead charges,' which are made up of various items incurred in the organization of the company and its work, the details of which need not be stated, but which it is claimed could not be avoided, and which enter, as is insisted, into the present value of the plant. These charges amounted to $90,000. Second, expenses of securing business, and particularly the value of the franchise, right of way, office furniture,

etc. The value of the franchise, it is claimed, is $80,000. Third, 'Working Capital,' amounting to $33,353.15, and supplies on hand amounting to $18,000. Fourth, the real estate and the improvements thereon of the value of $162,191.42. Fifth, the amount, somewhat indefinitely stated, of the excess in value of the toll lines over the $112,866.12 fixed upon them by the special master. Sixth, it is insisted that $50,000 should have been included in the estimate as a distinct and additional enhancement of the value of the plant because of the fact that the company is a going concern. In valuing property of the character of that involved here it would indeed be looking only at 'its bare bones' not to take into consideration the fact that the company is a going concern. *That fact, however, though possibly somewhat unconsciously to themselves,* must necessarily, we think, have been taken into account by the witnesses who testified as to the values."

Again the court says:

"'Overhead charges' consist of expenses much of which were incurred long ago. Probably those expenses may have aided very materially in increasing the present value of the plant. That present value we must ascertain, but it does not follow that 'overhead charges' as a separate item should be included as such. It seems to us that they are too intangible to be available for that purpose."

City of Omaha vs. Omaha Water Co., 218 U. S., 180.

City of Louisville, Appellant, vs. Cumberland Tel. & Tel. Co., supra.

In *Cedar Rapids Gas Light Co. vs. City of Cedar Rapids, supra,* at page 969, it is said:

"Also the sum of $100,000 was included by these witnesses as enhancement of value by reason of be-

ing a 'going concern.' As previously intimated, the value of the plant is to be estimated in its entirety, rather than by the addition of estimates on its component parts, though the latter course will materially aid in determining the value. Advantages have accrued through the sagacity of its management as contended by appellant. So, too, there are the inevitable mistakes which would not be likely in the construction of a new plant; but to put a new plant in profitable operation time would be required, and aside from the intangible element of good will, the fact that the plant is in successful operation constitutes an element of value. As said, the value of the system as completed, earning a present income, is the criterion. In so far as influenced by income, however, the computation necessarily must be made on the basis of reasonable charges, for whatever is exacted for a public service in excess of this is to be regarded as unlawful. Save as above indicated, the element of value designated a 'going concern' is but another name for 'good will,' which is not to be taken into account in a case like this, where the company is granted a monopoly."

In re Investigation of Advances in Rates by Carriers in Western Trunk Line, Trans Missouri, and Illinois Freight Committee Territories, 20 I. C. C., 347, Commissioner Lane states:

"The trend of the highest judicial opinion would indicate that we should accept neither the cost of reproduction, upon which the Burlington's estimate of value is made, nor the capitalization which the Santa Fe accepts as approximate value, nor the prices of stock and bonds in the market, nor yet the original investment alone, as the test of present value for purposes of rate regulation. Perhaps the nearest approximation to the fair standard is that of bona fide investment—the sacrifice made by the owners of the property—considering as part of the

investment any shortage or return that there may be in the early years of the enterprise. Upon this, taking the life history of the road through a number of years, its promoters are entitled to a reasonable return. This, however, manifestly is limited; for a return should not be given upon wastefulness, mismanagement, or poor judgment, and always there is present the restriction that no more than a reasonable rate shall be charged."

In *Smyth vs. Ames*, 169 U. S., 466, at page 546, Justice Harlan says:

"We hold, however, that the basis of all calculations as to reasonableness of rates to be charged by a corporation maintaining a highway under legislative sanction must be the fair value of the property being used by it for the convenience of the public. And, in order to ascertain that value, the original cost of construction, the amount expended in permanent improvements, the amount and market value of its bonds and stock, the present as compared with the original cost of construction, the probable earning capacity of the property under particular rates prescribed by statute, and the sum required to meet operating expenses, are all matters for consideration, and are to be given such weight as may be just and right in each case. We do not say that there may not be other matters to be regarded in estimating the value of the property."

San Diego W. Co. vs. City of San Diego, supra, at pp. 636-7.

Knoxville vs. Knoxville Water Co., supra, at pages 9 and 10, the court says:

"The first fact essential to the conclusion of the court below is the valuation of the property devoted to the public uses, upon which the company is entitled to earn a return. That valuation ($608,000)

must now be considered. It was made up by adding to the appraisement, in minute detail of all the tangible property, the sum of $10,000 for 'organization, promotion,' etc., and $60,000 for 'going concern.' The latter sum we understand to be an expression of the added value of the plant as a whole over the sum of the values of the component parts, which is attached to it because it is in active and successful operation and earning a return. We express no opinion as to the propriety of including these two items in the valuation of the plant, for the purpose for which it is valued in this case, but leave that question to be considered when it necessarily arises."

* * * * * * * * *

"The cost of reproduction is not always a fair measure of the present value of a plant which has been in use for many years. The items composing the plant depreciate in value from year to year in a varying degree. Some pieces of property, like real estate for instance, depreciate not at all, and sometimes, on the other hand, appreciate in value. But the reservoirs, the mains, the service pipes, structures upon real estate, standpipes, pumps, boilers, meters, tools and appliances of every kind begin to depreciate with more or less rapidity from the moment of their first use. It is not easy to fix at any given time the amount of depreciation of a plant whose component parts are of different ages, with different expectations of life. But it is clear that some substantial allowance for depreciation ought to have been made in this case. The officers of the company, *alio intuitu*, estimated what they called 'incomplete depreciation' of this plant (which we understand to be the depreciation of the surviving parts of it still in use) at $77,000, which is 14 per cent of the master's appraisement of the tangible property. A witness called by the city placed the reproduction value of the tangible property at $363,-

000, and estimated the allowance that should be made for depreciation at $118,000, or 32 per cent. In the view we take of the case it is not necessary that we should undertake the difficult task of determining exactly how much the master's valuation of the tangible property ought to have been diminished by the depreciation which that property had undergone. It is enough to say that there should have been a considerable diminution, sufficient, at least, to raise the net income found by the court above 6 per cent upon the whole valuation thus diminished. If, for instance, the master's valuation should be diminished by $50,000, allowed for depreciation, the net earnings found by him would show a return of substantially 6.5 per cent."

VII.

Increased earnings because of the reduced rate is properly considered in determining whether the rate complained of is reasonable or unreasonable.

In *Chicago & G. T. Ry. Co. vs. Wellman*, 143 U. S., 339, at page 343, the court says:

> "Can it be under these circumstances, that the court erred in peremptorily refusing to instruct the jury that an act fixing a maximum rate at two cents per mile is unconstitutional? Is the validity of a law of this nature dependent upon the opinion of two witnesses, however well qualified to testify? Must court and jury accept their opinions as a finality? Must it be declared, as a matter of law, that a reduction of rates necessarily diminishes income? May it not be possible—indeed does not all experience suggest the probability—that a reduction of rates will increase the amount of business, and, therefore, the earnings? At any rate, must the court assume that it has no such effect; and ignoring all other considerations, hold as a matter of law,

that a reduction of rates necessarily diminishes the earnings."

In *Chicago Union Traction Co. vs. City of Chicago*, 65 N. E., 451, at page 470, the court says:

> "If there was a reduction in the rate of fare which appellant was entitled to charge, by the requirement as to the giving of transfers, as set out in section 1723, it was incumbent upon the appellant to prove that such reduction has so diminished its profits so as to make the requirement unreasonable. It is possible that a reduction of rates might increase the amount of business and earnings of the appellant, instead of decreasing the same. The charge of a lower rate will often increase the number of passengers traveling upon the railroad to such an extent as to make the profits equal, if not superior, to those earned when a higher rate of fare is charged."

In *Chicago Union Traction Co. vs. City of Chicago*, 65 N. E., 470, at page 492, the court says:

> "If the original cost of the roads of the suburban companies be compared with their present value, the Consolidated Company, if it is to be considered as a separate company, has made a large profit, instead of a loss. It may be said here, as was said in the other case of *Chicago Union Traction Company vs. City of Chicago*, 199 Ill., 484, 65, N. E., 451, that a reduction of rates might have the effect of increasing the amount of business and earnings of the appellant, instead of decreasing the same. *A public service corporation is entitled, at the very most only to a profit on the actual investment.* (*Cotting vs. Stock Yard Company, supra*); and here the Consolidated Traction Company has made a profit on its actual investment."

Reagan vs. Farmers' L. & T. Co., 154 U. S., 400.

Railroad Commission of Alabama vs. Central of Georgia Ry. Co., 170 Fed., 225, at page 234, where it is said:

"The opinion in that case is very instructive as to the strict rule of evidence applicable to such cases, and the importance the court places on a test by actual trial before coming to the conclusion that an act in question in confiscatory. It appears from the statement of the case made by Mr. Justice Peckham, who delivered the opinion, that a preliminary injunction was issued by the circuit court, the cause referred to a master, who reported in favor of the complainant, and the circuit court confirmed the report. After such elaborate investigation, the Supreme Court indicated in its opinion the importance of a practical test by an actual trial, of the statute. It would clearly have been the better course in that case for the Circuit Court to have refused the preliminary injunction and let the test be made at first.

"The case of *Mayor and Aldermen of the City of Knoxville vs. Knoxville Water Company* (decided January 4, 1909) 29 Sup. Ct. 148, 53 L. Ed. —, was brought by a bill to enjoin an ordinance fixing maximum rates to be charged by the company. It was alleged that the ordinance was confiscatory, the rates being fixed too low. The complainant, after reference to a master, report, and confirmation, was granted relief by the lower court, and the injunction was made permanent. The court, speaking by Mr. Justice Moody, quoting earlier cases, said:

" 'In the first place, no injunction ought to be granted unless in a case reasonably free from doubt. We think such rule is, and will be followed by all the judges of the federal courts. * * * Judicial interference should never occur unless the case pre-

sents, clearly and beyond all doubt, such a flagrant attack upon the rights of property under the guise of regulations as to compel the court to say that the rates prescribed will necessarily have the effect to deny just compensation for private property taken for the public use.'

"The court laid strees on the fact that the case did not rest on 'observation of the actual operation under the ordinance.' "

Southern Pac. Co., et al., vs. I. C. C., 177 Fed., 963, at p. 969;

Louisville & N. R. Co. vs. Siler, et al., supra.

In *Wilcox vs. Consolidated Gas Company, supra,* at page 51, the court says:

"In this case a slight reduction in the estimated value of the real estate, plants, and mains, as given by the witnesses for complainant, would give a 6 per cent return upon the total value of the property, as above stated. And again, increased consumption at the lower rate might result in increased earnings, as the cost of furnishing the gas would not increase in proportion to the increased amount of gas furnished.

"The elevated railroads in New York, when first built, charged ten cents for each passenger; but when the rate was reduced to 5 cents, it is common knowledge that their receipts were not cut in two, but that, from increased patronage, the earnings increased from year to year, and soon surpassed the highest sum ever received upon the 10-cent rate."

Lincoln Gas & Electric Co. vs. City of Lincoln, 182 Fed. 926, at page 929, it is said:

"It appears from the evidence in this case that complainant's outstanding bonded indebtedness is $1,290,000, and that its stock is $2,500,000. The stock and bonds are each grossly in excess of the value of complainant's plant and grossly in excess of the cost of construction. Complainant's construction account shows that the entire cost of the plant to June 30, 1907, was $603,278.14. The evidence shows that complainant and its predecessor, to obtain money with which to construct the plant, sold its bonds and stock at an enormous discount, and I do not think that, in determining the reasonableness of rates the amount thereof should be considered. While complainant, I think, is entitled to at least 6 per cent upon the money invested, it does not appear that the reduced rate would not yield that sum. It is quite probable that the reduced rate would considerably increase the consumption of gas and thus increase complainant's net profits. The record shows that in June, 1902, complainant voluntarily reduced its rates from approximately $1.50 per thousand to $1.20, and the amount of gas consumed, and net profits resulting, considerably increased. The inquiry in cases of this character is not alone what has complainant theretofore earned, but it is what will be the effect of the ordinance reducing the rate upon the future net earnings of the company, and it devolves upon complainant to show not that the past rates have not produced a reasonable return, but that the rate prescribed by the ordinance will not in the future produce a reasonable return."

VIII.

In determining whether the rate in question constitutes a fair compensation for the use of appellants property, the *reasonable* value of appellants' property necessarily used in its gas business at the time of the

inquiry is to be taken as the foundation of the calculation.

Stanislaus County vs. San. Joaquín Ir. Co., supra;

San Diego L. & T. L. Co vs. N. & T. L. Co., supra;

Freeport W. Co. vs. F., 180 U. S. 600;

Spring Valley W. Co. vs. San Francisco, 124 Fed. 586;

Chicago T. R. Co. vs. City of Chicago, supra;

Souther vs. Glouster, 187 Mass., 555; 73 N. E., 558;

Kennebec W. D. vs. Water Belt, 97 Me., 203; 54 Atl. Rep. 6;

Knoxville vs. Knoxville Water Co., supra;

Wilcox vs. Consolidated Gas Co., supra;

Lincoln Gas & Electric Co. vs. City of Lincoln, supra;

Des Moines Water Co. vs. City of Des Moines, supra;

San Joaquin & Kings River Canal & Irrigation Co., Inc., vs. Stanislaus County, et al., 191 Fed. Rep. 875.

IX.

Where a gas company supplying gas to the inhabitants of a city laid its mains and pipes in unpaved streets, the value of the mains and pipes in estimating the value of the property, in fixing rates, could not be estimated on the basis that it would cost more to place the pipes because the streets had been paved.

Cedar Rapids Gas Light Co. vs. City of Cedar Rapids, supra.

X.

Donations and gifts by managing officers, even when approved by the Board of Directors, of public service corporations are illegal, and the courts will not permit such donations and gifts to swell the operating expenses, and especially not when the effect would be to make a rate fixed by law confiscatory.

McCrory vs. Chambers, 48 Ill. App. 445;

Holt vs Winfield Bank, 25 Fed., 812;

Davis vs. Old Colony Railroad Co., 131 Mass., 258.

XI.

Large and unusual expenditures should be spread over a period of years and not charged up to a single year.

Illinois Central R. R. Co. vs. I. C. C., 206 U. S., 441.

XII.

Exorbitant salaries.

In *Chicago & G. T. R. Co. vs. Wellman, supra,* at page 345, the Court says:

> "A single suggestion in this direction: It is agreed that the defendant's operating expenses for 1888 were $2,404,516.54. Of what do these operating expenses consist? Are they made up partially of extravagant salaries; fifty to one hundred thousand dollars to the president, and in like propor-

tions to subordinate officers? Surely, before the courts are called upon to adjudge an Act of the Legislature fixing the maximum passenger rates for railroad companies to be unconstitutional, on the ground that its enforcement would prevent the stockholders from receiving any dividends on their investments, or the bondholders any interest on their loans, they should be fully advised as to what is done with the receipts and earnings of the company; for if so advised, it might clearly appear that a prudent and honest management would, within the rates prescribed, secure to the bondholders their interest, and to the stockholders reasonable dividends. While the protection of vested rights of property is a supreme duty of the courts, it has not come to this, that the legislative power rests subservient to the discretion of any railroad corporation which may, by exorbitant and unreasonable salaries, or in some other improper way, transfer its earnings into what it is pleased to call 'operating expenses.' ''

XIII.

Depreciation.

In *Knoxville vs Knoxville Water Company*, at pages 13 and 14, the court says:

> ''The company is not bound to see its property gradually waste, without making provision out of earnings for its replacement. It is entitled to see that from earnings the value of the property invested is kept unimpaired, so that, at the end of any given term of years, the original investment remains as it was at the beginning. It is not only the right of the company to make such a provision, but it is its duty to its bond and stockholders, and, in the case of a public service corporation, at least, its plain duty to the public. If a different course were pursued the only method of providing for replacement of property which has ceased to be use-

ful would be the investment of new capital and the issue of new bonds or stocks. This course would lead to a constantly increasing variance between present value and bond and stock capitalization—a tendency which would inevitably lead to disaster either to the stockholders or to the public, or both. If, however, a company fails to perform this plain duty and to exact sufficient returns to keep the investment unimpaired, whether this is the result of unwarranted dividends upon over issues of securities, or of omission to exact proper prices for the output, the fault is its own. When, therefore, a public regulation of its prices comes under question, the true value of the property then employed for the purpose of earning a return cannot be enhanced by a consideration of the errors in management which have been committed in the past.'

Cedar Rapids Gas Light Co. vs. City of Cedar Rapids, supra.

Railroad Commission of Louisiana vs. Cumberland Tel. & Tel. Co., supra, where it is said:

"The burden of showing what part, if any of the depreciation fund accumulated by the telephone company from its receipts, was added to the capital, upon which dividends are to be paid, rests upon the company seeking to enjoin, as confiscatory and unreasonable, the enforcement of rates established by a state commission.

"No part of the depreciation fund accumulated by a telephone company from its receipts can be added to the capital, upon which the company is entitled to a fair return from rates established by a state commission."

Lincoln Gas & Electric Co. vs. City of Lincoln, supra; p. 928;

Cumberland Tel. & Tel. Co. vs. City of Louisville, supra, p. 646.

ARGUMENT.

I.

DUTY OF THE COUNCIL.

As January 1, 1911 approached the duty to "regulate and fix the rent or rate" that might be charged in the city of Des Moines for furnishing gas was pressing upon the council, and in fact had been for several months prior to that date. The Des Moines Gas Company, as all of the members of the council were aware, was operating under an ordinance which was passed pursuant to an agreement between the city and the gas company, and under which, beginning with 1905, and ending with the 31st day of December, 1910, gas was to be furnished at $1.00 per 1000 c. f., with an arrangement about prompt payment, etc.

As the law is written, no method is required to be followed by the council in ascertaining what would be a fair rate for gas, nor is the council in terms required to make investigation, grant hearings to the gas company, or follow any particular procedure. It appears, however, from the evidence in this case that the council not only made a good faith effort to inform itself fully with respect to the gas business in Des Moines, and other cities, but had been furnished information by the gas company itself upon which it had a right to rely in passing the ordinance complained of, and we assert without hesitation that if the gas company is to be held to the case made by it before the council as it ought, and as we think must be, it will not be necessary for the court to worry through the mass of conflicting claims and statements as to value.

Briefly, what information did the council have to form a basis for intelligent action on gas rates? It had the information gathered by the Mayor (Tr. p. 2803) and Mr. MacVicar (Tr. 2541) as to the numerous other cities in the country where gas is being sold under 90 cents per 1,000 c. f. It had the sworn statement of W. B. Keffer, Assistant Secretary and Treasurer of the Des Moines Gas Company, employed by that company in Des Moines for twenty-six years as indicated in defendant's Exhibit 44, on file with the record, made on the 15th day of February, 1908, that the entire physical value of the gas company's property on that date was $1,002,020, supported by the sworn statement of Mr. Jansen Haines made on the 14th day of March of the same year, as is shown by defendant's Exhibit 1. (Tr. p. 338-339.)

Now, it would seem that unless statements under oath made by the officers of this corporation and in response to the requirements of the taxing laws of the state are to be considered worthless and unreliable, and the truth in such matters not important, that the council had the right to rely upon the valuation of the property as stated by these gentlemen at that time.

In addition to this the council had the information contained in the local manager, Mr. Haines', letters as set out in Exhibit 44, beginning with the letter under date of November 22, 1910. In the letter of November 22, 1910, Mr. Haines gave the gross revenue from the sale of gas for three years, years ending September 30, 1908; September 30, 1909 and September 30, 1910. He also gave the operating expenses including taxes for the same years, made certain deductions for what he claimed would be a reasonable depreciation and then asserted that the net remaining earnings would give the company 8 per cent on $1,739,094, and expressed the thought that

the company's property and assets were largely in excess of that sum, but the court will notice that nowhere in any of his letters does he indicate any other valuation upon which the council was asked to figure out a reasonable return; on the contrary, everything in his letters indicates that the amount stated was what the company wanted the council to believe at that time was the value of the gas company's property. In the Haines letter of November 26, 1910, after again stating that they were getting but 8 per cent upon $1,739,894, and that the value of the plant was in excess of that sum, he says: "*I assume that you (and the council) would be interested in knowing the value of the property and the net revenue received under the present rate, as it is apparent that the question, as to what is a reasonable rate for gas, could only be determined from these facts.*"

All this could mean but one thing, and that is that the $1.00 rate which the gas company was willing to continue was producing a net return of only 8 per cent on the valuation of $1,739,894, and to make this showing it was necessary for Mr. Haines to figure depreciation at 10 per cent of the gross revenue, which is 8 per cent higher than the lowest witness states it, and at least 4 per cent higher than the highest witness for the city fixes the depreciation.

It will be noticed that nowhere in Mr. Haines' letters does he venture to give figures of any other valuation than that above stated. If the officers of the company at that time believed the gas plant was of greater value than that stated it would not have been necessary to bring the earnings down to an 8 per cent return by deducting so large a sum for depreciation, all that would have been necessary would be to state a higher valuation, and in this connection it should be remembered that these letters were written after conference with the

Philadelphia officers of the company, and were based upon memorandum that Mr. Douthirt, Secretary of the company, of Philadelphia, and Mr. Haines of Des Moines, had taken with them to Chicago, and the conclusion is irresistible that Douthirt and Haines had gone over the books of the company and concluded that $1,739,894 would fully cover the company's investment in its Des Moines plant. This becomes all the more evident when it is remembered that this sum about equals the investment as shown by the books, as Mr. Hall states in his report (Tr. p. 3633).

The council then had a right to believe that the company was valuing its property at $1,739,894, and in view of the valuation of $1,002,020 placed upon the plant by Keffer and Haines in the tax statement of 1908, the council had a right to conclude that the valuation claimed was if anything too high. It also had a right to believe that the company would be satisfied with a net return after all possible allowances for expenses, including taxes and depreciation of the sum of $139,191.52, and if by any fair weighing of the evidence in this case it can be found that the rate fixed by the council if put in force, will produce that sum, then, no matter what may be the truth about the numerous other disputed matters in the case, appellant's bill was rightly dismissed.

In making the following computation we deal only with round numbers.

Mr. Haines, in his letter, in stating the gross revenue for the year ending September 30, 1910, as $526,000 plus, indicates that the gas sold amounted to 526,000,000 c. f. At that time under the $1.00 rate the yearly increase for the last two or three years had been about 7 per cent. Mr. Haines, however, in his annual estimate for 1911, indicated that the increase would probably be

10 per cent even under the 1.00 rate. It is therefore not too much to say that the increase under the 90c rate would have been at least 10 per cent, which would have made the sales for 1911, 578,000,000 c. f., which at 90c, would produced $520,200. Mr. Haines gives the average operating expenses, including taxes for the three years ending September 30, 1910, in round numbers at $303,000. If we accept that average as about right for 1911, at the 90c rate with a 10 per cent increase in sales we would have left after deducting the $303,000 from $520,000 gross revenue, $217,000 or $29,000 in excess of the net earnings of $188,000 odd dollars as stated by Mr. Haines in his letter of November 22, and if we take out 10 per cent for depreciation, to-wit; the sum of $57,000 we have left $160,000 or $21,000 more than $139,000 as stated by Haines in his letter as the net earnings for 1910, after taking out operating expenses, taxes and depreciation.

It will at once be suggested by the other side that this is not a fair method of reaching the possible result under the 90c rate. It will be claimed that if the sales of 1910 are to be taken as a basis for the sales of 1911, that then we should also take the operating expenses of that year. We do not proceed that way because it appears, without conflict, in the evidence that as to the sales for 1910 the year was a normal one, the increase over 1909 being about the same as 1909 increase over 1908, but as to operating expenses the year was an abnormal one, that is to say, the difference between the operating expenses for 1908 and 1909 were about $2,000, while the operating expenses for 1910 exceeded the expenses for 1909 in the sum of about $61,000, at any rate, the $21,000 of excess as above computed for 1911 over 1910, together with the items of expense charged during 1910 that should be eliminated will more than

make up for any difference between the actual operation and the average as given by Mr. Haines, the result of all which is, that the council acted not only intelligently and in good faith, but the rate fixed by them will not only not reduce the complainant's net revenues, but is altogether likely to increase them.

Under such circumstances it is the universal rule, both in state and federal courts, that nothing short of an actual trial of the proposed rate will justify the court in interfering to prevent the enforcement of an ordinance of this kind. (See authorities cited in the brief).

Mr. Justice Holmes in San Diego L. Co. lays down the rule which should be applied here when he says:

> "In a case like this we do not feel bound to reexamine and weigh all the evidence, although we have done so, or to proceed according to our independent opinion as to what was proper rates, it is enough if we cannot say that it was impossible for a fair-minded board to come to the result which was reached."

Can the court here say that it was *impossible* for a fair-minded council to come to the result which was reached in this case.

In the Cumberland Telephone & Telegraph Company case, supra, we quote from the brief:

> "The presumption in favor of the correctness of telephone rates established by the state commission obtains, although the data upon which the commission acted may have been insufficient, so long as the rates adopted were not based entirely upon arbitrary conjecture."

In *Tilley vs. Railroad Company*, Justice Woods, says:

"The officers of the railroad company declare that the rate fixed by the commission will so reduce its income that it will not suffice to pay the running expenses of the road and interest on the bonded debt, leaving nothing for dividends to stockholders. The railroad commissioners assert that their schedule was formed to produce 8 per cent income on the value of the road, after paying costs of maintenance and running expenses. Which view is the correct one, it is impossible to decide. *There is, however, a conclusive way and it seems to me the only one by which the controversy can be settled, and that is by experiment. A reduction of charges is not always followed by a reduction of either gross or net income.* It can soon be settled which is right, the railroad company's officers or the railroad commission, in their view of the effect of the rates, by allowing the tariff to go into operation."

In *Capital City Gas Light Company vs. City of Des Moines, supra,* Judge Woolson states the matter thus:

"It is insisted by defendant that the reduction in the price of gas will work a corresponding and large increase in the amount consumed, resulting in increase of net profits as well. That some increase in consumption will follow reduction in price, plaintiff admits, but insists that there is no basis for believing such increase will be large, or that the net profits will increase at all. What will be the amount or per cent of increase in consumption, and whether any increase in profits will result from reduction of rates is and must at present be an uncertain matter. Must it be declared as a matter of law that a reduction of rates necessarily diminishes income? May it not be possible, indeed, does not all experience suggest the probability that a reduction of rates will increase the amount of business, and therefore the earnings. It cannot be determined in advance what the effect in reduction of rates will be. Ofttimes it increases business, and who can

> say that it will not in the present case so increase the value of business as to make it remunerative. *After all, there can be but one certain method of ascertaining the effect of reduction of rates, and that is the test of experience.*"

That Judge Woolson was right in the suggestion that a reduction in the price would not necessarily result in a reduction in the revenue it is only necessary to refer to Mr. Hall's report, which is uncontradicted and undisputed, and in which he shows a very large increase in the output of gas following reductions in price beginning at about the time or just immediately after Judge Woolson wrote the opinion in the foregoing case.

In *St. Louis vs. Hadley*, Judge McPherson, in his opinion, makes use of the following vigorous language:

> "One class of people claim that with the 2c fare travel will soon increase so as to make it remunerative; others deny this. How can these questions be determined? Is it not at present all speculation and guess work? Of what value will be the testimony of an ordinary business man, testifying by way of opinion, and of what value will be the testimony of railway experts giving opinions and illustrating his opinions by the use of many figures? Experience over a resonable period of time ought to, and no doubt will settle these matters."

How well this language might be applied to the situation here. Who knows to what extent the demand for gas may be increased in this city in the next few years. Who has attempted in this case, expert or non-expert, to say just what would result if the gas company was to obey the ordinance and reduce its price to 90c, certainly no one on appellant's side. The whole matter is left to speculation and guess work, except in so far as the testimony furnished by Mr. Haines, and the testi-

mony of Professors Bemis and Marks may tend to show that at least there will be no reduction in the revenues of the company.

Counsel for the appellant in an effort to show that there is no presumption in favor of the rate fixed by the city council cites *Knoxville vs. Knoxville Water Company, supra; Penn. R. R. Co. vs. Penna. Co.,* 15 L. R. A., (N. S.) 108, 68 Atl. 676, and *San Diego Water Co. vs. San Diego,* 50 Pac., 633-639.

The Knoxville case not only does not sustain counsel's position, but is in complete harmony with the holdings above referred to.

The Pennsylvania case is not in point. In the first place the constitutional provision involved in that case was entirely different from the one claimed to have been violated here, but even if that were not so, the case is not in harmony with the decisions of this court, and was rendered by a divided court, three of the judges dissenting.

In the San Diego Water Company case the manner in which the council reached its conclusion amounted to a fraud, and all that that court held in this respect was that the unfairness and bad faith of the council was sufficient to overcome the presumption of the correctness of its decision. At any rate, whatever of authority may be claimed for the case is outweighed by the decision of this court in *San Diego Land & Town Company vs. National City,* where the court said:

> "There is no ground to say that the appellant did not in fact have, or was denied an opportunity to be heard upon the question of rates. On the contrary it appears in evidence that the subject of rates was considered in conferences between the local authorities and the officers of the appellant. Those officers may not have been present at the final meet-

ing of the city board when the ordinance complained of was passed. They were not entitled of right to be present at that particular meeting. They were heard, and there is nothing to justify the conclusion that the case of the appellant was not fully considered before the ordinance was passed."

How nicely this language fits into the present case. Here the subject of rates was considered in conferences between the local authorities and the officers of the company. Not only that, but the company presented its claims to the council in writing, not only once, but several times. The company was not asking for further opportunity to present what it claimed to be the situation, but was simply asking the council to examine its books and accounts for the purpose of corroborating what it had stated in writing, and we might say here in passing, that whatever importance the company may have attached at that time to an examination of its books, accounts and records, it has during most of the trial of this case repudiated the idea that an examination of the books would help in the slightest degree to settle any of the questions involved in making rates. The company not only rested its case without introducing any of its books and records, but resisted every effort upon the part of the defendant to get clearly before the master the transactions of the complainant as shown by its books and records, and we reiterate, that in all the books no statute or ordinance has been set aside upon such a showing as has been made here.

II.

RETURN ON MONEY IN DES MOINES.

The evidence upon the question of the value of the use of money in Des Moines ranged from 3½ to 8 per cent,

and that investors in bank stock, manufacturing enterprises, such as Kratzer Carriage Company and the Des Moines Casket Company, expected a return of from 10 to 30 per cent. That stock in gas and other public utility companies earning 6 per cent were quoted on the market at par and over. No evidence whatever was offered by the appellants showing what return was being received on money invested in public utilities in Des Moines.

Upon this state of the record it would be little short of a miscarriage of justice if it should be determined in this case that a return of 6 per cent upon the investment of the appellant would be confiscatory, and especially is this true when it is remembered that in the recent gas case at Lincoln, Nebraska, a return of 5.2 per cent was held sufficient to save the rate fixed from being confiscatory, and in the Shepard-Northern Pacific case 7 per cent; in the Knoxville water case, 4 per cent with an allowance of 2 per cent for depreciation; in the Stanislaus County-Irrigation Company case, 6 per cent; in the Cumberland Telephone and Telegraph Company case, 7 per cent; and finally in the Missouri rate cases, decided by Judge McPherson, 6 per cent was held to be a fair return on the value of the railroad property involved in that controversy, and this was based upon the decision in the Wilcox gas case.

Two of the above decisions were rendered by this Court, and we confidently assert that it has never been decided anywhere in a case involving the manufacture and distribution of gas that a rate that would return 6 per cent upon either the fair value of the property or the investment of the owner in the property was confiscatory.

In the Cumberland case, in a well considered opinion it is said, that in rate cases all that is necessary to save

the statute or ordinance from the charge that it is confiscatory is that the rate will produce a return that will equal at least the minimum rate of interest in the locality where the plant is operated.

In the Stanislaus case, 192 U. S., at page 216, Justice Peckman says:

> "Much of the capital was invested between 20 and 30 years ago, and to be able still to realize 6 per cent upon the money originally invested is more than most people are able to accomplish in any ordinary *investment, and more than is necessary in order to give just compensation for property at the time it is used for the public purpose originally intended.*"

This opinion of Justice Peckham is a complete answer to counsel's argument, and fits this Des Moines situation, as some dealers would say, "like the paper on the wall." We have never questioned for a moment that many of the courts in dealing with the question of rates use the term "a just return on the fair value of the property."

The trouble with counsel, we fear, is that he fails to appreciate just was the court means by "property" and "fair value." A careful examination of the authorities will convince the most skeptical that in rate cases involving such a public utility as we are dealing with here where confiscation is charged, the *fair value* of the property never exceeds the value of the owner's investment in the property. (See Divs. IV and V of Brief.)

III.

PAVING.

Upon this question it ought to be enough to say that so far as we have been able to find this court has never

allowed this item as a separate value to be added to the value of the physical property, but whatever the state of the authorities may be, if anything could be added at all it would necessarily be limited to such an amount as the evidence disclosed the value of the property itself was enhanced by the fact that it was under paving.

Our judgment is that pavement instead of being an advantage and an added value to the pipe is a detriment and a disavantage on the theory that whatever adds to the expense of reaching the pipe for substitution or repair, or makes it more inconvenient to deal with decreases its value.

As to the pipe that was actually laid after the paving was in the cost of taking up and replacing the pavement of course should be added to the construction account, and in that way would enter into the value of the property just exactly as would the labor and material, but nothing should be added to the base figures of any of the witnesses, either for the complainant or the defendant, for this item of paving because the item is included and fully covered in the estimate of the value of the distribution system just as the other cost of material and labor was included, and it is also all included in Mr. Hall's figures showing the investment in this property. (See Division IX of Brief.)

The Master in determining the cost of reproducing the mains took the figures of complainant's witnesses with some modifications, and deducted therefrom $140,000 which had been included by these witnesses as the cost of tearing up and replacing pavement over mains which were laid before the streets were paved. The Master in his report, states fully his reasons for excluding this item of $140,000. Among other things he says:

"If we adhere strictly to the process of reproduction to ascertain the value of the plant, then, the above amount should be counted, and under a like concession in this case, as in the Water Works case, would very likely be justified, but the ultimate question in this case is the reasonable value of the property, and reproduction is simply the means adopted to determine it. When mains are laid in streets already paved, the work of taking up and replacing the pavement in so doing, is the work of the complainant, and should be considered precisely in the same light, as taking up and replacing the dirt when no pavement existed. It was done at complainant's expense. But where pavements are laid after the mains are installed, they have expended no money in taking up and replacing pavements. An allowance therefor, makes reproduction, the ultimate question, and not the reasonable value of the mains unless it further appear that the value of the mains are enhanced thereby to the extent of the cost of taking up and replacing pavements, which is not shown in this case. When the whole evidence is considered the contrary is shown."

Again he says:

'But the life of the mains is not enhanced thereby, and no value added to them by the reason thereof, then where is the justice of giving the complainant the benefit of this amount, when no enhancement in the actual value resulted therefrom, and not a dollar thereof, used in laying these mains, and no right of property acquired in the pavements. There is neither justice nor equity in it, but punishes the people who have spent their money to pave the streets, simply because some other company who desired to put in a gas plant, would have to be at the expense of taking up and replacing the pavement in building their plant. Such added value is wholly theoretical, when no benefit is derived therefrom; but rather the reverse thereto by reason of the increased cost of repairing them. To hold

> otherwise would be to permit them to reap where they have not sown." (Tr. p. 61-62).

In other words, if this item is added to the value of complainant's plant it amounts to permitting the company to capitalize this expense to the amount of $140,000, no part of which has ever been expended, and collect a return upon it for all time to come. It seems to us that the mere statement of the proposition shows how absurd and unsound it is, and especially so when it is remembered that the courts without division hold that the company is only entitled to a return upon property actually used by it in the business; a prospective expenditure is in no sense property. It is easy enough to understand why the cost of cutting through and replacing pavement where mains are laid after the paving is in should be added to the value of the mains, it is because the expense is actually incurred in laying the mains and in that way inheres in and becomes a part of the mains themselves just as much so as the labor cost of laying or the cost of excavaton or any other legimate cost actually incurred.

On the other hand, where the expense has not been incurred it is difficult to see how it could become a part of the property. As the Master says, it could only be upon the theory that reproduction or duplication cost is value, a doctrine never yet approved by any respectable court of last resort in this country, and expressly repudiated by the Supreme Court of the United States in the Knoxville case where, among other things, it is said:

> "The first fact essential to the conclusion of the court below is the valuation of the property devoted to the public use, upon which the company is entitled to earn a return."

And again:

"The cost of reproduction is not always a fair measure of the present value of a plant which has been in use for many years."

All that can reasonably be claimed for the so-called duplication or reproduction cost theory is that subject to the same modifications and deductions it is just as satisfactory a method of measuring and testing present value as is the original or recent cost theory and in some cases where original and recent cost is not available more satisfactory.

Our own judgment is that original cost when properly considered is a much safer measure of value than duplication cost. It is based upon actual operations and does not depend in any sense upon either conjecture or speculation. At any rate, upon neither theory would it be either just or equitable to allow the item of $140,000 for paving over mains.

In the first place the amount allowed and included by the Master was taken from the testimony of one of appellant's experts, the witness Baer. The estimate of this witness upon this item of paving was unsually high and was arbitrary in its nature; that is to say, it was not based upon actual cost for material and labor here in this city, and from what the Master says in his report it is evident that he felt that he not only had allowed and included in his final value all that the evidence would justify, but that he had been very liberal.

IV.

GOING VALUE.

Counsel in dealing with these items says:

"Perhaps a substantially correct definition of this element in the value of this property would be

> the difference between the value of the plant as it was with its established business at the time in question, and what would have been the value of the same physical property tested out and in a condition to operate, but without business, or developed earnings."

And then he proceeds to argue for an allowance for this item based upon the method of measuring it adopted by the witnesses, Lea, and Baehr, that is, by their so-called comparative or hypothetical plant method, and he for some unaccountable reason refuses to recognize the fact that the supreme court has for years distinguished between the so-called going value that inheres in and is attached to the physical property because the component parts are connected up and the whole makes a completed workable and working machine, and the going value that does not in any way inhere in or become a part of the physical property not attached to and applies only to the *business* of a going concern.

The first of the above elements of value the supreme court of the United States has recognized as present in every rate case, while the second element of value which attaches to the business has never been recognized or allowed by that court in rate cases; but on the contrary, in the recent water case involving a sale under contract of the Omaha Water Plant the court very clearly indicates that the going value which attaches to the business of a going concern is not a legitimate element of value to be considered in rate cases. So that the confusion that counsel refers to does not exist at all, and the rules that apply to this so-called going value in rate and sale cases are as well settled now as are the rules that apply to the other elements of value.

In the Omaha Water case Justice Lurton, in the opinion at page 201, uses this language:

> "That there is a difference between even the cost of duplication less depreciation of the elements making up the Water Company plant and the *commercial value of the business as a going concern is evident.*"

He then cites, as supporting the proposition, Justice Brewer's opinion in the National Waterworks case at Kansas City, the Gloucester and Norwich cases, none of which were rate cases, and then he says:

> "No such question was considered in either *Knoxville vs. Knoxville Water Co.*, 212 U. S. 1, or in *Wilcox vs. Consolidated Gas Company, supra. Both cases were rate cases and did not concern the ascertainment of value under contracts of sale.*"

What does Justice Lurton mean by this part of his opinion? Is it not simply that duplication less depreciation would cover not only the value of the "bare bones" of the physical property but in addition the so-called going value that follows the connecting up of the separate parts and making it a part of a completed working machine, but would not cover the commercial value of the business that follows and results from the operation of the machine; or to put it as he does, the value of the business as a going concern.

Borrowing a term, "Obviously" the statement of Justice Lurton in referring to the Knoxville and Wilcox cases that both cases were rate cases meant that in such cases the value of the *business* as a going concern as distinguished from the value of the plant as a connected and completed whole was not to be considered in rate cases, any other interpretation would involve the intelligence of the court.

The going value talked about by counsel and testified to or measured by the witnesses Baehr, Lea and Ran-

dolph is the commercial value of the business as a going concern, and not in any sense the going value that inheres in and attaches to the physical property because of its being a live machine. This is evident not only from counsel's statement quoted above, but is shown conclusively in the method adopted by the witnesses, Lea, Baehr and Randolph, in measuring the amount that should be allowed, and it is our contention that since this is not a case in which appellant's business is either being taken or sold, the value of that business is not important and cannot be added to the value of the property; and as to the element of going value that attaches and inheres in the physical property because of its being connected up and made a part of a completed workable whole ready to take care of the business as fast as it comes that value is included in the base figures of all the witnesses as to the valuation of the physical property. This must be so, because otherwise an old and delapidated brick building erected some twenty or thirty or more years ago would not be listed by Mr. Lea as worth as much today as it cost then. In fact, the difference between the scrap value of most of this property and the value placed upon it by the witnesses represents the value that attaches and inheres in the property because it is connected up and as a live operating machine.

It is only necessary to refer to the 24-inch pipe under the Des Moines river. If that pipe were disconnected from the Des Moines Gas plant and was not bearing a part of the burden of the completed machine what would be its value? Could anybody be found anywhere that would pay the expense of removing it for the pipe? If not, then what is it that gave it the value Lea, Baehr, Randolph, Marks and Bemis attached to it. Was it not the fact that it was connected up and was a part of a

live operating machine? And in this connection we might suggest that neither Lea nor Baehr nor Randolph anywhere attempt to separate the value of the "bare bones" of this property from its value as a completed machine. The going value they dealt with in their so-called hypothetical machine *is* the value of the business based on earnings.

Whatever view the court may take of this question of going value the only evidence there is in the case with respect to this element applies to the commercial value of the business alone.

In the Cumberland Telephone & Telegraph case cited in Division VI of the Brief, the court in dealing with this question of going value that inheres to the physical property says:

> "In valuing property of the character of that involved here it would indeed be looking only at its 'bare bones' not to take into consideration the fact that the company is a going concern, *that fact, however, though possibly somewhat unconsciously to themselves must necessarily, we think, have been taken into account by the witnesses who testified as to valuation.*"

This is exactly what all of the witnesses in this case did who testified before the Master upon the question of value. Both the witnesses for the appellant and appellees, in arriving at their final estimate, fixed the value on the plant in operation and not a dead plant and not merely the "bare bones" of the plant, thus including in the estimate on the physical value the only going value or going concern value proper to be considered in this case; and we hasten to say here that on this question of going value, or going concern value as the term is sometimes used, it must be admitted, and we do and have

always throughout this controversy admitted, that this plant as a going concern earning profits for its stockholders is worth more than it would be if it were a dead plant, or as some of the courts put it, the plant is worth more as a going concern than the bare bones. At the same time we have urged and still urge that the witnesses whose valuations the master accepted in arriving at his final conclusions as to the value of the physical property were not dealing with bare bones nor with a dead plant, but with a plant that was in operation earning money for its owners. The difference between us on the trial below on this question of going value was largely as to whether or not the value that attaches to the property because of its being a going concern is included in the Master's finding of $2,100,000. We insist that it is. Counsel for the appellant takes the opposite view.

Every fact established by the record as well as the Master's report sustains our contention, while this court will look in vain for any fact or circumstances in the record, or statement in the Master's report sustaining complainant's view.

Take the distribution system for instance. Would any intelligent person conversant with the record in this case contend for one moment that the hundred and more miles of mains of this company buried as they are five or more feet under ground, some of them under the river, would be worth anything like a million and a half dollars if separated from the business of manufacturing gas? If not, then what is it that gives this system the value that the Master puts upon it? Is it not the fact that these miles of mains are attached to and a part of the completed plant of the complainant with a developed business and in "successful operation?" Take the buildings, some of them thirty-six years old, none of them fit

for any other purpose or business than the manufacturing of gas, would they be worth anything like $66,000 if they were not a part of an operating plant earning money for its owners? And so you might go on down through the list and you would find that at least 90 per cent of this property, if nothing was to be considered but the "bare bones," would be without any value, not even a "scrap value."

The whole question, however, is settled by the Master when he says in his report (Tr. p. 109):

> "The physical value as hereinbefore determined, is reckoned upon the fact that the plant was 'in successful operation' when the ordinance was enacted, otherwise, its value would be much less."

How much less it is not important for us to know now, but whatever the amount, it represents what has been included in the $2,100,000 valuation as the difference between the value of the "bare bones" of this plant and its value in successful operation.

Again he says:

> "Going value is that enhancement which results from a well developed and paying business. This would result in reducing the estimated deficits for each year $24,000, and yield a return to the complainant of at least 6 per cent on $2,100,000."

It is now contended by counsel that both the Master and the court below were confused upon this question of going value, and, as he says, allowed them $300,000 and then took it away from them.

This whole matter was threshed out before his Honor, Judge McPherson. What the city claimed below was, not that the Master had added exactly $300,000 to the

value of the physical property in order to reach his figures of $2,100,000, but that the figures he accepted in finding his final value of $2,100,000 were all based on the fact that the plant was a live operating plant, and that, therefore, when he found the value of such a plant to be $2,100,000 there was nothing left to be added. That we are right in this contention is shown by the following from Judge McPherson's opinion on page 166 of the transcript:

> "The Master fixes the physical value at $2,240,-928.00. He means thereby and to my mind clearly states that as the value of the gas plant. There are but five items making this grand total. Counsel on both sides and I agree that 'going value' is a part of the present value. The Master so held. It would be strange that the Master would hold that the 'going value of $300,000.00 entered into the actual value, and then by inadvertence omit it. And it would be the more strange, after considering the items set forth in the report.
>
> By the report he lists the following:
>
> | | | |
> |---|---|---|
> | 1. | Working capital | $140,000.00 |
> | 2. | Real estate | 150,000.00 |
> | 3. | Organization expenses | 6,923.00 |
> | 4. | Meters in stock | 6,603.00 |
> | 5. | Present value of physical property, aside from above items | 1,937,402.00 |
>
> Evidently because the Master used the word physical counsel seem to conclude that he did not include 'going value.' If he had omitted the word 'physical' as an identification, then no one would doubt but that he did include 'going value.' But why would the Master include five items, and omit one that he meant to include? But the criticism is too refined and technical to stand as against his entire report. After enumerating the four items he

adds 'present value of physical property aside from above items, $1,937,402.00.' This is as though he had said 'all other items of value to be considered.'

How can it be said that he meant 'junk value'? Or 'bare bones' value, as used in some of the cases? It is not fair to say that he meant junk value or bare bones value. He meant that was the value coupled with the preceding items of the gas plant; a plant making and selling gas. He meant that, and neither more nor less than that."

It is evident from reading the Master's report that up until the decision of this court in *Cedar Rapids Gas Light Company vs. City of Cedar Rapids,* 223 U. S., 655, the Master was laboring under the opinion that something should be allowed for the kind of going value that the witnesses, Lea, Baehr and Randolph, were claiming, and which they termed the value of a developed business, but after reading the Cedar Rapids decision, and after recognizing, as he did, that in finding the physical value of the property he had "reckoned upon the fact that the plant was in successful operation," he decided that to add the $300,000 that he had worked out as the value of the developed business would be to allow going value twice; or in other words, that he already had in his $2,100,000 the only going value that the appellants were entitled to have allowed in this case. At any rate, for the purposes of this case, the statement of the Master is conclusive as to the basis of his valueation and the manner in which he reached his conclusion, and when taken in connection with the decision of this court in the Cedar Rapids case—that everything in the way of value beyond the fact that a plant is in successful operation is a good will or monopoly value and is properly excluded—effectually disposes of appellant's contention that the so-called going value of this plant

has not already been included in the Master's valuation of $2,100,000.

V.

OVERHEAD CHARGES.

There should be nothing added to the value of the gas company's property on account of the so-called overhead charges further than what appears upon the books of the company as charged to construction. The burden of proof as to all these matters is upon the appellant, and in ascertaining the value of this property, certainty wherever possible should take the place of speculation and conjecture. The officers of the appellant had it within their power to give the court exact information as to these so-called overhead charges, and how much, if anything, had gone into the value of the property because of them. It not only failed to furnish this information, but upon repeated requests from the appellees refused to make any effort to ascertain for the Master the facts as to these so-called charges. On the last day that testimony was taken President Haines was asked if he had secured the information as to overhead charges for the last two years, and he somewhat impatiently replied that he had not. In the face of such conduct we are asked to take the estimates of Lea, Baehr and Randolph as to what would be the probable expenditures along this line if a new plant were being built.

See *Cumberland Telephone & Telegraph Co. vs. City of Louisville,* and other cases cited in Division VI of Brief.

VI.

WORKING CAPITAL.

In a rate case like this we have serious doubts about the justice of adding anything to the value of appellant's property upon account of working capital other than the average value of the supplies and material shown to be on hand during the year in which the inquiry is being had. It seems to us that any other method of dealing with this item would lead to questionable and doubtful results. Of course, in making rates it would be entirely proper for the rate-making body to consider such an item in determining the reasonable charge for the service in question, but whatever may be the law we are convinced that from $50,000 to $75,000 would be an ample allowance for this item. The Master allowed for this item $140,000.

IN CONCLUSION.

Since counsel for appellant confines his argument largely to an effort to convince this court that the Master who spent months in hearing the evidence was somewhat confused and uncertain as to just what items went into his valuation of the whole property, and that the court below confirmed the Master's report upon a misapprehension as to just what the Master had found, we do not go into an analysis of the testimony, but content ourselves with calling the court's attention to the fact that in fixing the value of appellant's property upon which it was entitled to a fair return at $2,100,000, the Master was, as Judge McPherson states in his opinion, liberal with the Gas Company.

The valuation fixed is from $300,000 to $500,000 higher than the estimate of any of the city's witnesses, and as shown by Hall's report, the books of the Company show

a cash investment in the company's property over and above what was put in out of earnings only the sum of $168,255.56, and the total investment in the property according to the books, after reducing the amount by the depreciation figures used by the Master, is, in round numbers, $1,500,000. The stockholders have taken out in cash between $500,000 and $600,000, and still the Master finds the value of the property now to be $2,100,000; in other words, the owners of this property have put into it in cash and earnings, in round numbers, a total of $1,700,000; have taken out between $500,000 and $600,000, and have a property left of the value of $2,100,000 upon which they will be permitted to earn a return.

These facts, together with the fact that the Master found that with economy and care the cost of manufacturing and distributing gas by this plant may be reduced below sixty (60) cents, and that Lea and Baehr, witnesses for the appellant agree with him, Lea showing in his exhibit 20 that it will cost for 1911 in round numbers 59 cents; 1912, 58 cents; 1913, 57 cents; 1914, 56 cents; 1915, 55 cents; 1916, 54 cents; 1917, 53 cents, and that, as the Master says, as increase of sales to present consumers would practically double the profits per m. c. f. on the increase, all goes to show that the appellant failed to carry even the ordinary burden of proof much less to make out its case by that clear and satisfactory evidence that is required in cases of this kind. The truth is, that the all important question in the case, i. e., what result would follow the enforcement of the ordinance providing for 90 cents gas,—was never directly touched by the appellant during the entire hearing before the Master. There is not one word of direct proof upon its side upon that question.

We have shown insofar as it was possible for us to do

so that no loss of revenue would result to the appellant under the 90 cent rate, and we content ourselves now upon that question by directing the court's attention to the decision of this court in the Wilcox Consolidated Gas case, the Cumberland Telephone & Telegraph case, opinions both written by Justice Peckham, and the Knoxville Water case, opinion by Justice Moody.

In the Knoxville case the court says:

> "At the threshold of the consideration of the case the attitude of this court to the facts found below should be defined. Here are findings of fact by a Master, confirmed by the court. The company contends that, under these circumstances, the findings are conclusive in this court, unless they are without support in the evidence, or were made under the influence of erroneous views of law. We need not stop to consider what the effect of such findings would be in any *ordinary* suit in equity. The purpose of this suit is to arrest the operation of a law on the ground that it is void and of no effect. It happens that in this particular case it is not an act of the legislature that is attacked, but an ordinance of a municipality, nevertheless, the function of rate-making is purely legislative in its character, and this is true, whether it is exercised directly by the legislature itself or by some subordinate or administrative body, to whom the power of fixing rates in detail has been delegated. * * * * The constitutional invalidity should be manifest, and where that invalidity rests upon disputed questions of fact, the invalidating facts must be proved to the satisfaction of the court. In view of the character of the judicial power invoked in such cases it is not tolerable that its exercise should rest securely upon the findings of a Master, even though they be confirmed by the trial court. The power is best safeguarded against abuse by preserving to this court complete freedom in dealing with the facts in each case. Nothing less than this is demanded by the respect due from the

judicial to the legislative authority. It must not be understood that the findings of a Master, confirmed by the trial court, are without weight, or that they will not, as a practical question, sometimes be regarded as conclusive. All that is intended to be said is, that in cases of this character this court will not fetter its discretion or judgment by any artificial rules as to the weight of the Master's findings, however useful and well settled these rules may be in ordinary litigation."

It is here stated by Justice Moody that this kind of a case is not to be disposed of as would an ordinary suit in equity, nor will the rules apply that prevail in ordinary litigation, and when Justice Moody says, as he does here, that the invalidating facts must be proved to the satisfaction of the court, he means no more nor less than that the burden was upon the appellant to put the effect of the 90 cent rate upon the business of the Des Moines Gas Company beyond doubt or question. Has this burden been met when no witness on the part of the appellant has attempted to estimate the revenue of the company under the 90 cent rate?

Again Justice Moody says:

"Before coming to the question of profit at all the company is entitled to earn a sufficient sum annually to provide not only for current repairs, but for making good the depreciation and replacing the parts of the property when they come to the end of their life. * * * If, however, a company fails to perform this plain duty and to exact sufficient returns to keep the investment unimpaired, whether this is the result of unwarranted dividends upon over issues of securities, or of omission to exact proper prices for the output, the fault is its own. When, therefore, a public regulation of its prices comes under question, the true value of the property then employed for the purpose of earning a return

> cannot be enhanced by a consideration of the errors in management which have been committed in the past."

Which means neither more nor less than that it would be proper, and, in fact, be the duty of the company to put aside out of its earnings a reasonable amount for a depreciation fund, but that where the company has failed to do that and has either taken out of the business in the shape of dividends the money that should have been put aside to take care of depreciation, or has allowed it to be used for extensions and betterments it cannot be added to the value of the property or considered in determining whether a rate is confiscatory; in other words, under the rule laid down here, nothing can be added in this case in the way of depreciation, either to the value of the property or to increase the operating cost thus reducing the profits.

Justice Moody proceeds:

> "We think it was error to confine the investigation to, and base the judgment upon, that year alone. (The year preceding the passage of the ordinance.) The precise subject of inquiry was, what would be the effect of the ordinance in the future. The operations of the preceding fiscal year, or of any other past fiscal year, were valueless if the year was abnormal, and were only of significance so far as they foretold the future. If, as in this case, sufficient time has passed, so that certainty instead of prophecy can be obtained, the certainty would be preferable to the prophecy. *In this case there could be no absolute certainty, because the ordinance had never been put in operation.*"

Appellant tried to put itself in harmony with the rule by taking the average of the five years preceding the

passage of this ordinance, one of which was admittedly an abnormal year, and in that way tried to make certain what Justice Moody here says could not be made certain because the ordinance had never been put in operation.

Again, if, as the court says, "the precise subject of inquiry was what would be the effect of the ordinance in the future" we stop to inquire as to where in all the mass of testimony presented by the appellant is there any evidence upon this subject. The appellant not only did not attempt to deal with this subject, but its witnesses refused to even estimate the effect of the ordinance on the company's revenue.

Proceeding further, Justice Moody says:

> "The valuation of the property was an estimate and is greatly disputed. The expense account was not agreed upon. The ordinance had not actually been put into operation; the inferences were based upon the operations of the preceding year; and the conclusion of the court below rested upon that most unsatisfactory evidence, the testimony of expert witnesses employed by the parties."

Every one of these statements apply with withering force here. No two witnesses agree as to value, there is dispute as to the expense account; the ordinance had never been tried; so far as the appellant is concerned, the inferences as to future operations are based upon the transactions of five preceding years, and here the evidence is that given by expert witnesses employed by the parties. We, however, make out a stronger case as applied to this part of the Knoxville decision than was made by the city in that case. We have shown by three witnesses, one of them Mr. Hall, so accurate in his computations and statements that no one questions the truth

of what he says, that there will be no real loss of revenue under the 90 cent ordinance.

In the Wilcox case, Justice Peckham after dealing with the value of the real estate and plants in that case says:

> "Both depend largely upon the opinions of expert witnesses as to the value of that kind of property. Where a large amount of the total value of a mass of different properties consists in the value of real estate, which is only ascertained by the varying opinions of expert witnesses, and where the opinions of the plaintiff's witnesses differ quite radically from those of the defendants, *it is apparent that the total value must necessarily be more or less in doubt. It, in other words, becomes matter of speculation or conjecture to a great extent.*"

We have just such a situation here as Justice Peckham refers to above. No two witnesses on either side agree as to the value of the real estate; not only that but much of the value of a large part of the services was put in doubt by one of the appellant's witnesses, Mr. Moul, in his testimony just before the evidence was closed. He says that up to 1896 the consumer paid on an average of about $7.50 for the service from the curb line to the meter. Baehr, Lea and Randolph includes the entire service in their valuation notwithstanding a large part of the services under Moul's testimony belonged to the consumers.

Again, as Justice Peckham says:

> "And again, increased consumption at the lower rate might result in increased earnings, as the cost of furnishing the gas would not increase in proportion to the increased amount of gas furnished."

This is in exact harmony with the testimony of Pro-

fessor Marks, but is not recognized by counsel for appellant in any of their computations.

Justice Peckham proceeds:

> "Of course, there is always a point below which a rate could not be reduced, and, at the same time, permit the proper return on the value of the property; but it is equally true that a reduction in rates will not always reduce the net earnings, but, on the contrary, may increase them. The whole question of how much an increased consumption under a less rate will increase the earnings of complainant, if at all, at a cost not proportioned to the former cost, *can be answered only by a practical test.*"

The opinion goes on:

> "In such a case as this, where the other data upon which the computation of the rate of return must be based, are from the evidence so uncertain, and where the margin between possible confiscation and valid regulation is so narrow, we cannot say there is no fair or just doubt about the truth of the allegation that the rates are insufficient."

In the Cumberland case, Justice Peckham, in dealing again with rates, this time, however, in a telephone case, says after stating a contention of the Railroad Commissioners upon the investment of the depreciation reserve:

> "If the onus rested upon the commission to show these facts, it is evident that the obligation has not been fulfilled, but it is just here that the difficulty lies. It was obligatory upon the complainant to show that no part of the money raised to pay for depreciation was added to capital, upon which a return was to be made to stockholders in the way of dividends for the future. It cannot be left to conjecture, but the burden rests with the complainant

to show it. *It certainly was not proper for the complainant to take the money, or any portion of it, which it received as a result of the rates under which it was operating, and so to use it, or any part of it, as to permit the company to add it to its capital account, upon which it was paying dividends to shareholders.*"

"If that were allowed, it would be collecting money to pay for depreciation of the property, and, having collected it, to use it another way, upon which the complainant would obtain a return and distribute it to its stockholders. That it was right to raise more money to pay for depreciation than was actually disbursed for the particular year there can be no doubt, for a reserve is necessary in any business of this kind, and so it might accumulate; but to raise more than money enough for the purpose and place the balance to the credit of capital upon which to pay dividends, cannot be proper treatment. The court below said it was impossible to find out from the books how much of this had been done, and it treated the fact as one to be explained by the commission, and not by the complainant. In other words, while this fact was a material one, the onus was placed upon the commission, and not the complainant, to show it. We think, on the contrary, that the obligation was upon the complainant. Now, although the books, it is said, does not show how much money collected for depreciation has been, in fact, used to increase the capital of the complainant, upon which dividends were paid to stockholders, yet still, even if the books do not show accurately, or even at all, what disposition was made of these moneys, at any rate the officers of the complainant must be able to make up some reasonable approximation of the amount, even if it be impossible to state it with entire accuracy; and this duty rests with the complainant, in order that it may discharge the duty devolving upon it to prove that the rates were not unreasonably high under

> order No. 552. It may be that the sum, if any, thus used, was not enough to affect the claim that the rates under discussion were unreasonably low. The evidence is sufficient to show clearly that which complainant is under obligations to show."

Here we have a clear and definite statement as to what the court meant in the Knoxville case when it was dealing with depreciation. These two cases establish the rule that in cases of this kind the service company has the right, and, in fact, it is its duty to lay aside out of the earnings of the business a reserve large enough to take care of depreciation, but that the amount so laid aside may not be added to capital account, and dividends earned thereon, and that whenever in any case the money has been so used before relief can be granted against a rate charged to be confiscatory the complainant must show just how much of the depreciation fund has gone into the property, thus increasing the capital account and enhancing the value of the physical property.

Here, again, we pause to inquire how this court will be able to find just how much of the surplus earnings of this appellant which was intended to cover depreciation has gone into the property or into the capital account; how much, if any, has been paid out in the form of dividends. There is absolutely nothing in the evidence, nor is there anything in the books of the company for that matter, that will aid the court in determining that question, and if, as Justice Peckham says, these are matters which appellant is under obligations to show, can there be a finding in its favor?

To make the matter even clearer, Justice Peckham says:

> "We are not considering a case where there are surplus earnings after providing for a depreciation

> fund and the surplus is invested in extensions and additions, we can deal with such a case when it arises."

The court then proceeds to point out the difference between the effect of a reduction of rates in the telephone business and in other kinds of business, and suggests that increased demand would not follow reduction of rates in the telephone business, and then says:

> "Such, it is admitted, would be the case generally in regard to water companies, gas companies, railroad companies, and perhaps some others where the rate is a reasonable one. * * * So, also, in furnishing gas at reduced rates, the reduction in the rate would very probably result in increased consumption, not only in increased demands from more consumers, but also an increased consumption by consumers already existing, and the increased cost of furnishing the gas would be nothing like in proportion to the increase in consumption. In these cases increased profits might be the result of decreased rates."

Right in this connection we call the court's attention to the fact that the testimony of the city's witnesses all indicate increased consumption with reduced rates, which when taken in connection with the fact that the company's operating expenses, evidently for the purposes of this trial, were swelled by the allowance to certain officers of the United Gas Improvement Company of Philadelphia of salaries in the sum of $10,000 (Tr. pp. 75-76), and increase in the salary of the local manager after this case was commenced of nearly fifty (50) per cent. (Tr. p. 75) and with large donations and gifts, (Tr. pp. 76-77) all indicate how impossible it was for either the Master or the court below to avoid a decision against the appellant, and how unjust it would be now, after

so long and costly a contest, for this court to enter any other order or judgment than one affirming the judgment below and ending the litigation.

Both the Master and the court below gave the appellant every opportunity to make out their claim that the 90 cent rate was unreasonable and confiscatory, and in many instances gave appellant credit in the valuation of its property for items which, to say the least, were very doubtful, among which might be mentioned an item of $120,000 for a Holder which neither accountants for the company nor the defendants could find mentioned anywhere in the books of the company, (Tr. p. 3637 Hall's report), and $140,000 working capital; this allowance was made notwithstanding the fact that all supplies and material on hand was included in the valuation; thus making in these two doubtful items alone $260,000.

In addition to this the Master, for some reason or other, relied largely on the testimony of appellant's expert witnesses notwithstanding the fact that it developed on the hearing that these experts had several conferences in advance of the hearing in which comparison of figures and methods were made, and at which counsel for the company went to the extent of going through the form of taking the testimony of the several experts; in other words, what these several experts were expected to testify to at the hearing was gone over fully, their statements taken down by a stenographer and transcribed. (Tr. pp. 1035-1053, Baehr's testimony; pp. 3224-3227 Moul's testimony).

Under these and other peculiar circumstances surrounding the case, the finding of the Master against the appellant, confirmed as it was by the lower court, should not only have great weight but should be conclusive on this appeal; especially is this true when as is shown by

the record, 3,781 pages of evidence was taken, and weeks and weeks of time was consumed by appellants in an effort through the testimony of expert witnesses to make out a case, and the decree below should be affirmed as was done in the Missouri rate cases reported in 230 U. S., 474.

Respectfully submitted,

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